NETWORK WORLD

THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES VOLUME 4, NUMBER 43 OCTOBER 26, 1987

▶ *TELECOM '87*

X.400 tops ticket at world show

Debuts, demo draw meeting spotlight.

BY MARY PETROSKY
West Coast Correspondent

GENEVA — A bevy of new products and an impressive 21-vendor networking demonstration at Telecom '87 here last week drew attention to the growing popularity of the X.400 international messaging standard.

Both IBM and Telenet Communications Corp. unveiled new X.400 products at the international communications show. The two companies also participated in the X.400 network demonstration, which featured both equipment vendors and public network providers. However, the new IBM products, as well as the company's existing X.400 offerings, will be available in Europe only.

IBM announced the X.400 Message Transfer Facility Program for systems running its VM/SP and VSE/SP operating systems. The program allows applications running under either operating system to exchange messages with other private or public mail systems that support X.400. Big Blue also introduced an X.400 Professional Office System connection.

In addition, the firm unveiled a new release of its OSI application programming interface, General Teleprocessing Monitor for Open

See page 43

▶ *TELECOM '87*

DEC lays plans to link VAXes, PBXs

Will team with major switch makers to push voice/data network integration.

BY BOB WALLACE
Senior Editor

GENEVA — Digital Equipment Corp. last week detailed plans to team with leading private branch exchange manufacturers to develop software that will link their switches to stand-alone or networked DEC computers.

The plans, outlined within DEC's Computer-Integrated Technology (CIT) Program announced at the Telecom '87 conference here, are intended to spur development of applications that functionally integrate voice and data. This would enable, for example, an incoming call to a customer representative to invoke the retrieval of the caller's computer file.

DEC said Northern Telecom, Inc., British Telecommunications plc — which owns Mitel Corp. — NEC America, Inc., Ericsson, Phil-

See page 42

▶ *NETWORK MANAGEMENT*

IBM salvo adds to NetView's stature

BY PAUL KORZENIOWSKI
Senior Editor

RYE BROOK, N.Y. — IBM last week announced a spate of communications products that further emphasize NetView as a key underpinning in an evolving architecture designed to enable users to more easily link and control IBM processors.

The products announced also add new networking capabilities to the company's mid-range systems. Among the products were three application programs designed

See page 38

NETWORK LINE

News

▶ At Telecom '87 in Geneva, IBM announces alliances with Siemens and Bell Atlantic. IBM also signs to work with Nynex on an ISDN trial. Page 2.

▶ Telenet and Tymnet/McDonnell Douglas air new-generation packet switches at Telecom '87. Page 2.

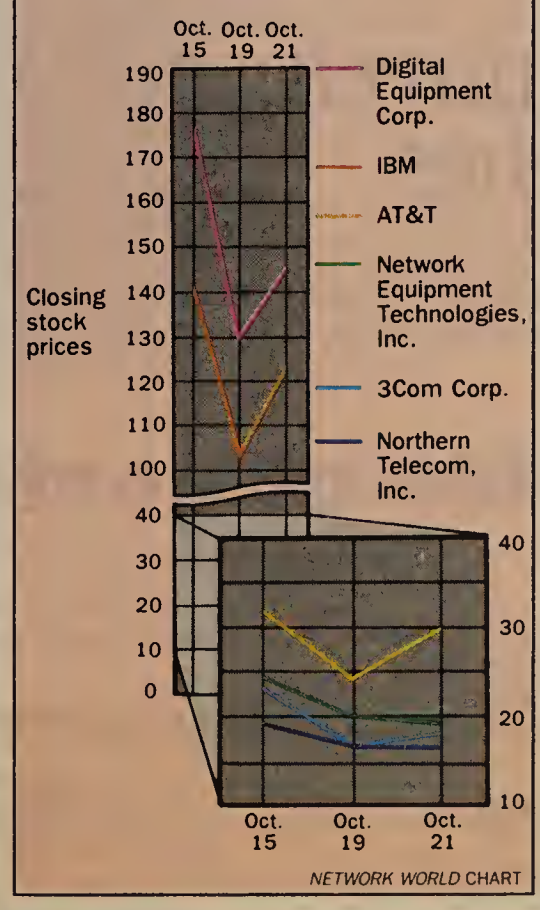
▶ 3Com introduces a high-performance 80386-based local net file server that's twice as fast as its current top-of-the-line model. Page 4.

Features

▶ Sometimes, users need immediate access to accurate data — no matter where they are. Emergency data needs are driving the development of mobile data systems. Page 30.

NEWSPAPER

How key companies weathered the stock storm



NETWORK WORLD CHART

▶ *MARKET MADNESS*

Stock plummet spells trouble

Dow dive may limit growth of communications firms.

BY PAM POWERS
Senior Editor

The stock market crash that sent the Dow Jones industrial average plummeting 508 points last Monday could weaken some communications vendors' chances of survival, particularly if a recession sets in, as many financial analysts predict.

The market's volatility during the past week has created general anxiety that will make investors and users more cautious about how they spend their money. At worst, it has dried up an important source of capital for firms that rely on stock issues to fund expansion of their operations.

Last Monday, now gloomily dubbed Black Monday, saw an accelerated stock market decline that rocked the investment community, as the Dow tumbled 508 points to 1,738.74 and total market

See page 6

OPEN SYSTEMS: HOW OPEN ARE THEY?

Planning for open systems takes on Prime importance

BY MICHAEL FAHEY
Senior Writer

While Prime Computer, Inc. doesn't have pockets as deep as those of its minicomputer rivals Digital Equipment Corp., Wang Laboratories, Inc. and Hewlett-Packard Co., the Natick, Mass.-based company insists it's ready to compete vigorously in the connectivity game.

Prime continues to support its proprietary architecture, Primenet, which incorporates the X.25 packet-transport standard (see diagram on page 35). Meanwhile, Prime is plotting its course to meet

Continued on page 33

▶ *TELECOM 87*

IBM boosts telecom efforts in Europe

Also plans ISDN field tests with Nynex.

BY BOB WALLACE
Senior Editor

GENEVA — IBM last week expanded the scope of its advanced networking efforts, announcing alliances with international telecommunications equipment producer Siemens AG as well as Bell Atlantic International.

Termed "joint studies" by IBM, these agreements, plus IBM's plan to join with Nynex Corp. in a U.S.-based Integrated Services Digital Networks field test to begin in April 1988, were detailed at the Telecom '87 conference here. The event, sponsored by the International Telecommunications Union, drew more than 200,000 attendees over 12 days.

Although Helmut Schmidt, vice-president of telecommunications for IBM Europe, maintained IBM is not in the telecommunications business, he did say the vendor wants a bigger piece of the European customer premises equipment, applications and information processing markets.

He said the trio represented a $140 billion market in 1986 in Europe, exclusive of central office switching gear sales.

IBM Germany's pact with Siemens AG and IBM's teaming with Bell Atlantic International, in non-exclusive contracts, represent the multinational vendor's latest efforts, via partnerships with dominant foreign telecommunications vendors and Post, Telephone and Telegraph administrations, to explore the market for intelligent international networks.

If built, these systems would draw on the combined strength of IBM's data processing and data network management systems, in addition to advanced digital voice and data switches from the likes of Ericsson and Siemens AG.

By combining large computer data bases with switching gear, telephone companies operating these intelligent networks would be able to offer their subscribers advanced services, including virtual private network services, 800 calling services and alternate billing services using credit cards.

IBM said its agreement with Siemens AG will allow the pair to examine how their expertise can be merged to create new telecommunications services. IBM's joint study agreement with Bell Atlantic will be aimed at assessing market demand outside the U.S. for a series of "intelligent network voice, data and image applications," based on an architecture developed for use in the U.S. by Bell Communications Research, Inc.

The IBM and Nynex ISDN field test will tie a Nynex site in Manhattan through a Northern Telecom, Inc. central office switch to a second facility in White Plains, N.Y.

Both parties claim the project could run into the 1990s. In the trial, six to eight IBM-provided workstations, equipped with prototype ISDN Basic Rate Interface adapters, will communicate through the central office switch to an IBM controller also fitted with the Basic Rate Interface adapter. The controller will route data through a Nynex-owned IBM mainframe running Systems Network Architecture applications, including order processing and billing systems operations.

IBM and Nynex gave different reasons for participating in the technology trial. John McElroy, ISDN Systems Manager for the

See page 6

▶ *TYMNET/MCDONNELL DOUGLAS, TELENET*

Private net giants unveil latest packet switches

BY MARY PETROSKY
West Coast Correspondent

GENEVA — Packet-switch network vendors Tymnet/McDonnell Douglas Information Systems Group and Telenet Communications Corp. used the Telecom '87 show here to unveil their next-generation packet switches last week.

Both companies, although two of the largest in the domestic market for private packet-switched networks and public data network services, have been under increased pressure from customers and hungry new competitors to upgrade their switch technology to take advantage of recent developments.

Tymnet/McDonnell Douglas introduced the Series 750 packet switch, or Turbo-Engine, while Telenet debuted its TP4/III switch line. Both switches can be used in either public or private packet-switching networks. Each company claims to have approximately 100 private network customers.

Both switch lines have a 32-bit multiprocessor architecture based on the Motorola, Inc. 68020 microprocessor, although Telenet's switch also uses some proprietary integrated circuits. Coincidentally, both companies also opted to program their new switches in C language to ensure application portability with future switches.

Tymnet/McDonnell Douglas' switches are based on a single, pro-

See page 43

Network World wants to make its news coverage even better, and for that we ask your help. If you know of an interesting event that just occurred or is about to occur, please call. We'd also like to know how you optimize your networks. Call Editor Bruce Hoard toll free at (800) 343-6474.

Table of contents

▶ *PURCHASING NETWORKS*

Airlines go on-line for supplies

Specification 2000 cuts paperwork.

BY MICHAEL FAHEY
Senior Writer

ANNAPOLIS, Md. — An international group of airlines and their parts and equipment suppliers have established an electronic data interchange network designed to help air carriers cut procurement costs and trim inventories by eliminating much of the paperwork involved in purchasing.

The network, called Specification 2000, is expected to be fully operational early next year and will eventually link more than 100 airlines with several hundred suppliers. There are currently about 50 airlines and 65 suppliers involved in the project, according to Gerald Sturman of the Air Transport Association of America, which is coordinating the cooperative effort. In the U.S., participants include Trans World Airlines, Inc., Pan American World Airways, Inc. and United Air Lines, Inc.

Using an IBM Personal Computer or compatible, a Hayes Microcomputer Products, Inc.-compatible 1,200 bit/sec modem and dial-up or dedicated telephone lines, airline personnel can access a centralized data base that maintains cross-vendor information on parts availability. They can also place orders for parts. The centralized data base, maintained on fault-tolerant Tandem Computers, Inc. computers, is administered by Aeronautical Radio, Inc. (ARINC), headquartered here. ARINC and the Air Transport Association of America are nonprofit organizations that serve the airline industry.

Dial-up transmissions to ARINC are routed to a group of AT&T 3BII computers that act as front-end processors for two Tandem Non-Stop II computers and two Tandem TXP computers. Information is sent back to Specification 2000 users in the same manner. Traffic from dedicated links is fed directly into the Tandem processors.

The suppliers periodically provide a magnetic tape to ARINC that is loaded into the data base. "Every conceivable part that would need to be replaced on an airplane can be listed on the data base. It is like a giant electronic catalog," Sturman said. "It tells airlines, for example, all the suppliers that have part number 1234 available. They get pricing information and the lead time for delivery."

A customer wishing to purchase a part from a particular supplier can send an order. via a standard

See page 37

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▶ *LOCAL NETWORKS*

3Com unveils 80386-based LAN file server

BY JIM BROWN
New Products Editor

SANTA CLARA, Calif. — 3Com Corp. is expected to introduce today an Intel Corp. 80386 microprocessor-based local network file server that operates nearly twice as fast as its existing top-of-the-line server.

3Com is targeting its 3S/400 file server at customers that want local nets larger than its existing high-end 3Server3 will support, said Jim Cansler, marketing manager for 3Com's system marketing group. Analysts say the higher performance model brings 3Com closer in capability to players in the high end of the file server market, including Banyan Systems, Inc. and Nestar Systems, Inc.

In a benchmark test done for 3Com by LanQuest Group of Santa Clara, Calif., 3Com said the unit handled server tasks about twice as fast as the 3Server3.

The 3S/400 comes with preloaded 3+Share386 network operating system software, an enhanced version of existing 3+Share. That software takes advantage of the 80386 chip's processing power and enables the server to support both DOS and IBM Network Basic I/O System applications written to utilize the 80386.

The 3S/400 is equipped with 2M bytes of random access memory. A 32-bit bus architecture enables the server to support a pair of memory expansion cards of up to 6M bytes each. The 3S/400 also comes with a 150M-byte disk drive. Using a small computer system interface, additional 150M-byte disk drives can be attached to expand the server to a capacity of 900M bytes.

The new server also features built-in Ethernet and Apple Computer, Inc. AppleTalk adapter boards. With those boards, Ethernet-connected IBM Personal Computers running 3+DOS can communicate with AppleTalk linked Macintoshes running 3+Macintosh. Future versions of the product will support 3Com's TokenLink token-ring network adapter board, Cansler said. However, the 3S/400 is able to support only two network adapters concurrently.

"It was necessary for 3Com to go with the 80386 in order to get a really high-performance box," said Brad Baldwin, a local-area network analyst with San Jose, Calif.-based DataQuest, Inc. "With the new server, 3Com is nipping at the toes of Banyan and [DSC] Nestar [Systems, Inc.]," Baldwin said. Both those firms offer high-performance Motorola, Inc. 68000-based file servers that provide links between various local networks and offer wide-area network services such as X.25 gateways.

With the new unit, 3Com also keeps pace with a myriad of competitors, including archrival Novell, Inc., that have already released 80386-based file servers, Baldwin said.

According to Eric Killorin, president of Hyatt Research Corp. in Andover, Mass., the Ethernet controller in the new server processes Ethernet protocols more quickly than previous models, enabling the server to support faster Ethernet packet transmissions. Ethernet throughput tends to degrade as networks get larger, which is not as true of token-ring technology typically used in larger networks, he said. "The Ethernet controller in the new server puts Ethernet and Token-Ring on more of an even par in terms of performance in larger networks," he said.

The 3S/400 features four 16-bit IBM Personal Computer AT-compatible expansion slots. Those slots can support Digital Communications Associates, Inc.'s IrmaLAN and Hayes Microcomputer Products, Inc.'s SmartCom II boards.

Elgar Corp. of San Diego supplied 3Com with a power failure

See page 37

▶ *AVAILABLE LATE IN '88*

Banyan promises VINES for VAXes

BY PAULA MUSICH
Senior Editor

DALLAS — Banyan Systems, Inc. said at Novell, Inc.'s NetWorld trade show last week that it will offer a version of its Virtual Network System (VINES) networking software for Digital Equipment Corp. VAX minicomputers.

Although Banyan demonstrated a Unix-based prototype of the software running on a MicroVAX at the trade show, President Dick Meise said that Banyan won't have a commercially available product ready until mid- to late-1988.

VINES running on the VAX would allow the minicomputer to act as a nondedicated server for networked IBM Personal Computers and compatibles. The VAX would provide networked personal computers with most of the capabilities available on existing Banyan servers, such as file and print sharing, the StreetTalk naming scheme, electronic mail, modem pooling, security and network management features, Network Basic I/O System support and file-locking services.

Banyan eventually intends to provide a VAX/VINES version that will support direct personal computer access to VAX-resident files over the network. Most personal computer-to-VAX products now provide personal computer users with DEC terminal-emulation capabilities through software running on individual personal computers or a server. Generally, personal computers are linked to VAXes through asynchronous links.

The initial VAX version will complement Banyan's existing products for "people that have VAXes and Banyan, or have VAXes and intend to buy Banyan," said David Williams, Banyan's director of product planning. For customers that have VAXes with processing power to spare and want to network personal computers, a VINES version for the VAX would allow them to use the VAX as a server, rather than buy a separate Banyan server.

"For our customers that have VAXes, they can make better use of those machines, which have extended storage and tape backup resources. The VAX is a much bigger machine and people want to use it as a resource from their PCs," he said. Williams said that, in the long term, Banyan's goal in developing a VAX/VINES offering is to provide greater integration of personal computers and VAXes.

Banyan's strategy is to coexist with existing computer and communications resources in large organizations. "These corporations are trying to integrate PCs into existing large departmental networks," said Mary Kirson, director of product marketing. "The benefits of our approach include ease of use and administration, more efficient communications and, most importantly, security," she said.

Later support to be added will include task-to-task communications and direct personal computer access to host files on the VAX through a server/client function. "Our direction is to integrate mini and personal computer applications," Williams said.

How soon a VAX version of VINES becomes available depends on whether Banyan decides to base a VAX/VINES networking system on DEC's VMS or a Unix operating system, Meise said.

"Should our choice be Unix, it would just be a matter of turning what we have now into a product," Meise said. The prototype, as well as Banyan's existing versions, are based on Unix. A Unix version could be available by mid-1988.

Should Banyan take the Unix approach, the firm must also decide between Unix Berkeley Software Distribution and Ultrix, DEC's implementation of Unix. "We're leaning toward Ultrix," Williams said.

Banyan, however, has also received a "tremendous amount of interest" in a VMS implementation of VINES, Williams said. A VMS version of VINES wouldn't be available until the end of 1988.

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▶ *NOVELL*

6,000 flock to second NetWorld

BY PAULA MUSICH
Senior Editor

DALLAS — More than 6,000 attendees jammed conference sessions and sought out the latest in Novell, Inc. NetWare-compatible products at last week's Novell-sponsored NetWorld '87 trade show at the Infomart here.

Attendance at the second annual NetWorld conference was easily double that of last year's show. The Novell conference also eclipsed the only local network-specific trade show, LocalNet, in attendance. Last year, LocalNet attracted an estimated 4,000 attendees.

Buoyed by the success of NetWorld, Novell announced plans to hold a second, international version of the show in Europe, starting in 1989.

Novell also used the event to announce plans to bundle Message Handling Service (MHS) software, which provides message transfer and routing services, into future versions of its NetWare local network operating system beginning in the first quarter of 1988.

The software provides an application program interface that allows developers to add communications capabilities to their programs more easily. Novell said MHS allows applications to be developed that can run on networks using network operating systems such as NetWare, 3Com Corp.'s 3+, IBM's PC LAN Program, Microsoft Corp.'s MS-Net and Banyan Systems, Inc.'s Virtual Networking System.

One user, D. Cheryl Wilhite, a local net technical analyst for San Jacinto Savings in Houston, listened intently as speakers reviewed selection criteria for choosing local net-to-host gateways.

Wilhite said San Jacinto Savings is just beginning to explore the use of wide-area links and host gateways. The bank, a subsidiary of Southmark Corp., is currently running two Novell NetWare servers supporting 119 users at one location. Wilhite said she expects to network another 40 users in branch offices around the area and interconnect those offices with one another and with host computers.

Another user making the transition from work group networks to organization-wide networking, Warren Benson, said existing dedicated links to mainframes and to minicomputer nets are no longer acceptable. "We have been using Irma boards to connect PCs directly to 3274 controllers,

See page 43

▶ *FCC PROPOSAL*

Users skeptical of rate cap

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — Users are not convinced the Federal Communications Commission's rate cap proposal will have the desired effect of reducing telephone rates and increasing rate payer safeguards, according to comments filed with the commission last week.

A number of telecommunications users groups, as well as long-distance and local exchange carriers, submitted comments to the FCC in response to the commission's Aug. 21 notice of proposed rule making, in which the rate cap plan was outlined.

The FCC plan would eliminate current rate-of-return regulations on AT&T and the regional Bell holding companies that limit the amount of profit the carriers can earn for providing services. In place of the regulations, the agency would impose rate caps, or price ceilings, on all local and long-distance services. The carriers would, in effect, be able to set their own profit levels by controlling costs associated with providing services.

Bell Atlantic Corp. said the rate cap plan would allow it to cut telephone rates by 2.4%, or $100 million, over a three-year period by eliminating administrative costs associated with the current regulatory system, according to Patrick Hanley, Bell Atlantic assistant vice-president of federal regulatory affairs.

But users and industry analysts said in filings they remain unconvinced that the rate cap plan would be a change for the better. Users said the FCC has not adequately demonstrated how the rate cap system will prevent carriers from engaging in strategic pricing, or pricing that is not based on cost, and from skimping on service quality in order to cut costs and increase profits.

In its filing, the Ad Hoc Telecommunications Users Committee said the FCC must first prove that the rate cap system is better than the existing rate-base regulation before charging forward. "If not, the commission should leave well enough alone," the group's filing said.

Rate-of-return rules have been much maligned, perhaps unnecessarily, the Ad Hoc group said in its comments. "While not without its problems, traditional regulation has produced a great deal of good for telecommunications consumers by maintaining just and reasonable telephone rates."

The FCC argued that rate-of-return regulation is an outdated system that gives carriers perverse incentives to inflate costs in order to inflate profits. The new system, said the FCC, would reduce unnecessary regulation and eliminate carrier incentives to inflate costs and engage in cross-subsidies.

The FCC proposed implementing the rate cap plan first for AT&T and later for the RBHCs. AT&T supported this approach and suggested the FCC impose a two-tiered rate cap on AT&T rates, according to AT&T Vice-President of Marketing Services Larry Garfinkel.

One cap would cover basic domestic and international long-distance service, and a separate cap would be imposed for all other services, Garfinkel said. "The rate cap plan more accurately reflects the competitive realities of today's long-distance market by allowing market forces to determine the cost of service," Garfinkel said.

The RBHCs said they should be subject to the new streamlined rules concurrently with AT&T. Bell Atlantic, for example, suggested that the rate cap be enacted for AT&T and the

See page 43

▶ *QUARTERLY REPORTS*

Top three carriers release financials

Firms show mixed earnings.

BY PAM POWERS
Senior Editor

MCI Communications Corp. and US Sprint Communications Co. last week reported improved quarterly results, reflecting steady growth in long-distance volume and declining expenses, while arch-rival AT&T reported a slight increase in revenue and a decrease in earnings for the quarter.

Analysts were particularly pleased with MCI's and US Sprint's financial results, which they said exceeded expectations and reflected healthy market share growth and declining operating expenses.

AT&T

AT&T posted earnings of $505 million, a 6% decrease compared with earnings of $533 million for the third quarter of last year. Revenue grew less than 1% to $8.47 billion from $8.43 billion last year.

Long distance contributed most to the slight revenue increase, but analysts said it is apparent that AT&T continues to lose market share in that area to competitors MCI and US Sprint.

George Dellinger, a senior analyst with Washington Analysis Corp. in Washington, D.C., said, "AT&T's modest quarterly earnings came mostly from long distance. The performance from the rest of its operations was nothing to write home about."

As expected, quarterly revenue from telephone rentals plunged again as customers continued to purchase their own equipment, rather than renting. Rental revenue was down 34% to $899 million this year from $1.2 billion last year.

Sluggish sales in AT&T's computer division, which was reorganized two weeks ago, has also dragged down quarterly revenue.

While AT&T will not divulge specifics concerning that operation, AT&T spokeswoman Adele Donahue said, "We are ahead of schedule in cutting losses, making that division prof-

See page 38

"We're building our system into the walls, not building walls into our system.

We'd wasted enough money and floor space in the past, messing with separate voice and data schemes. Reconfiguration was an ongoing nightmare. Ever try to cross-connect using Type 2 cable? Believe me. Since we were starting from the ground up, we wanted a wiring plan that was once-and-for-all. One that was flexible, designed to handle upgrades and changes. And one that wasn't going to come back and hang us with a coaxial noose. We've got enough competitors who'd like to do that.

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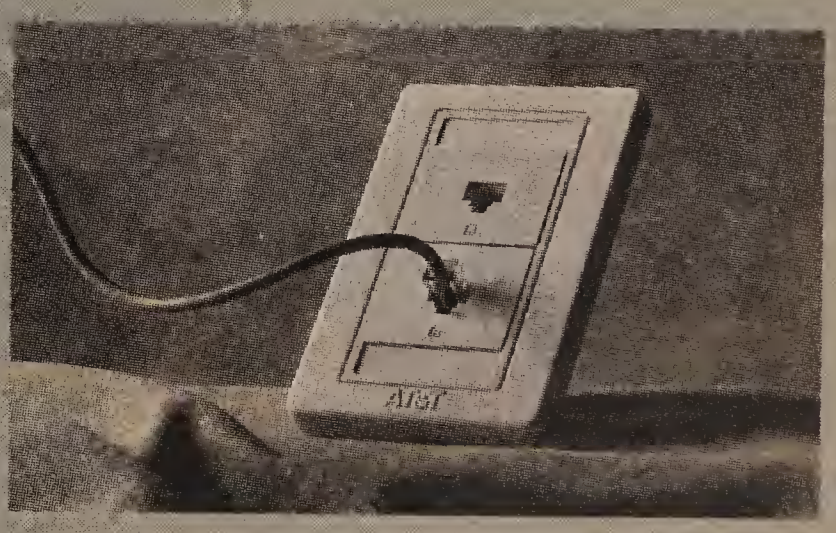

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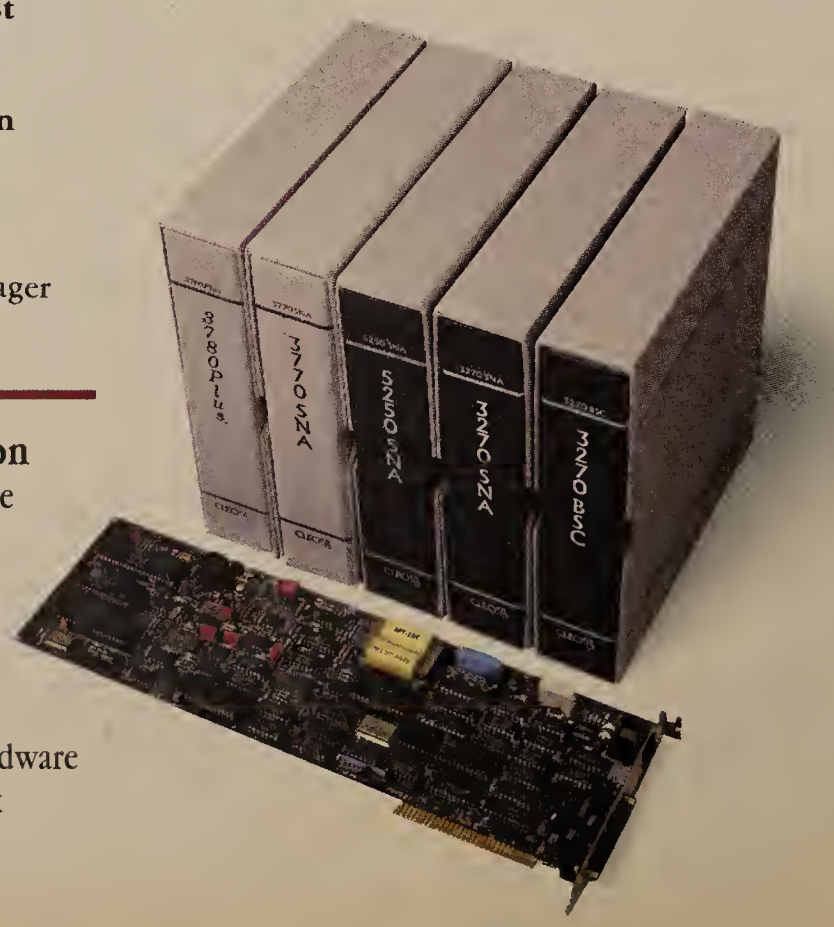

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INDUSTRY UPDATE

DCA reports record earnings

Digital Communications Associates, Inc. (DCA) reported record earnings of $8.9 million for its first fiscal quarter ended Sept. 30, up from $4.1 million from the similar quarter a year ago. Revenue grew 27% over last year's third quarter to $50.2 million. A DCA spokesman said the strong performance of DCA's new personal computer communications products and the continued success of its networking equipment were key factors in achieving the record earnings. The company expects to begin initial shipments of its MacIrma product later this month. MacIrma enables Apple Macintosh II and Macintosh SE personal computers to communicate directly with IBM mainframe computers.

COMMUNICATIONS CONGLOMERATE

French giant Alcatel enters U.S. picture

BY PAM POWERS
Senior Editor

SAN JOSE, Calif. — It has been six months since Alcatel N.V. entered the U.S. market proclaiming itself a $13 billion worldwide communications company second only to AT&T, but the question sprawled across its ads still demands an answer: What's an Alcatel?

The company, headquartered in Brussels, was formed in January 1987 with the merger of ITT Corp.'s telecommunications equipment operations and the French Compagnie Generale d'Electricite (CGE), a 20-year-old telecommunications conglomerate. Although it wields size and an impressive budget, it faces formidable competition in its efforts to carve out a dominant share of the domestic communications market.

The company will spend well over $2.5 million this year on advertising and trade shows in an attempt to familiarize Americans with the company name, which stems from a 100-year-old firm originally known as Alsatian Cable and Telegraph.

Honing U.S. profile

Defining Alcatel's operations and strategy to U.S. customers is, in fact, a chief priority for the president of Alcatel Business Systems, Inc., Tracy Atherton. "My job is to get people here in the U.S. to understand who we are. America's perception of Alcatel is, 'What is it?' I have to get them to understand that Alcatel is just a new name for companies users have been dealing with for years," Atherton said. Until very recently, achieving name recognition for Alcatel has taken precedence over forming a business strategy for U.S. operations, Atherton said.

Analysts said that while more than 64% of Alcatel's annual sales will be contributed by communications equipment, 46% of that amount comes from central office switches and other transmission equipment sold to carriers. Cur-

See page 12

The Alcatel invasion of America

Alcatel Business Systems, Inc.

— expected 1987 sales of $500 million
— employs 4,800 people

Divisions:

PABX Systems Corp.	Markets private branch exchanges and key systems through interconnects. Formerly ITT Business Communications Corp. and Thomson CSF.
Cortelco	Markets telephones and key systems apparatus through telephone companies, interconnects, long-distance carriers and retail markets. Formerly the apparatus division of ITT Telecommunications.
Courier Information Systems	Markets IBM-compatible display systems and local networks
Friden Alcatel	Markets mailing and shipping systems
Qume Corp.	Markets computer peripherals
Servcom	Computer and communications equipment maintenance
Xtra Business Systems	Computer manufacturer

SOURCE: ALCATEL BUSINESS SYSTEMS, INC., SAN JOSE, CALIF.

INDUSTRY EYE

PAM POWERS

Proceed with caution if market recedes

Last week's stock market nosedive will certainly spawn a plethora of gloomy economic predictions, as many wrong as right. But such an unexpected plunge is certain, at the very least, to create some instability in the market and could have far-reaching effects on both fledgling and established communications vendors.

History suggests that a stock market plummet is an indicator of an approaching recession — every recession since World War II has been preceded by a sustained decline in the Dow Jones Index. Be that as it may, a faltering stock market creates skittishness in the business world, as people lose faith in their own investments and in other companies struggling against the downturn.

Caution then becomes the watchword. Communications buyers will become even less likely than normal to risk buying from small, unestablished companies that might not be able to weather the storm.

Small start-ups that hoped to fund their own expansion by going public will sit tight, because a depressed stock market is unlikely to support the per-share price their company's stock would otherwise deserve.

At the same time, larger public companies may be forced to tighten purse strings, knowing they can't dip into the shareowner well for additional research and development or other funds.

With the combined influence of rising interest rates, a depressed stock market and the recent trend toward severe consumer indebtedness, people will start saving money. For the communications buyer, that means curbed budgets, which, in turn, will depress vendor revenues.

While most vendor sales will suffer under that scenario, equipment such as low-end and mid-range statistical multiplexers may actually experience a resurgence in popularity as users attempt to save money with less sophisticated, and less expensive, technology.

Increased interest rates may also take some wind from the sails of the acquisition craze. When the cost of borrowing money to finance purchases of other companies becomes too dear, vendors will hold off and wait for better times.

RBHC REVENUES

RBHCs report modest 3Q earnings growth

BY PAM POWERS
Senior Editor

The seven regional Bell holding companies reported modest increases in earnings for their third fiscal quarters, citing growth in calling volumes and improved results from unregulated operations.

Analysts said the RBHCs remain strong, despite pressures from as-yet-unprofitable nonregulated operations, lower rates of return on regulated services and the costs associated with the early retirement plans several companies put into effect recently.

Only US West, Inc. posted a decline in revenue, which a spokesman attributed to lower rates of return from regulated operations. The Federal Communications Commission last year lowered the RBHCs' allowable rate of return from 12.75% to 12%. This year, US West instituted its third early retirement plan since divestiture, reducing staff size to 57,600, down from 59,600 a year ago. Unregulated operations contributed $9.6 million to profit for the quarter and will be "in the black" for the year, the spokesman said.

Ameritech attributed a slight increase in earnings to a 2% growth in subscriber lines and "improved results from the Ameritech Enterprise Group," the RBHC's unregu-

See page 12

The following are all fiscal third-quarter figures.

Ameritech
1987 revenue, $2.42 billion; earnings, $301.1 million.
1986 revenue, $2.35 billion; earnings, $291.8 million.

Bell Atlantic Corp.
1987 revenue, $2.59 billion; earnings $321.8 million.
1986 revenue, $2.49 billion; earnings $297.9 million.

BellSouth Corp.
1987 revenue, $3.12 billion; earnings, $418.6 million.
1986 revenue, $2.89 billion; earnings, $399.2 million.

Nynex Corp.
1987 revenue, $3.08 billion; earnings, $332.1 million.
1986 revenue, $2.87 billion; earnings, $314.3 million.

Pacific Telesis Group
1987 revenue, $2.33 billion; earnings, $310.3 million.
1986 revenue, $2.31 billion; earnings, $285.1 million.

Southwestern Bell Corp.
1987 revenue, $2.09 billion; earnings, $314.1 million.
1986 revenue, $1.96 billion; earnings, $275.8 million.

US West, Inc.
1987 revenue, $2.13 billion; earnings, $277.5 million.
1986 revenue, $2.14 billion; earnings, $268.3 million.

▶ *N.E. TEL INVESTIGATION*

Mass. rate row flares

Dukakis office causes stir with filing.

BY MARY LINEHAN
Staff Writer

BOSTON — Action continued in a controversial telephone service rate case here recently when Gov. Michael Dukakis' administration withdrew a brief filed with the Department of Public Utilities (DPU) that Attorney General James Shannon claimed advocates raising residential telephone rates.

The DPU began investigating New England Telephone & Telegraph Co.'s rates in October 1985 as a result of the AT&T divestiture. Shannon said the company is making sufficient revenues to reduce rates and that it is trying to use residential customers to subsidize a network overhaul. New England Telephone disagrees.

Dukakis' Secretary of Economic Affairs Joseph Alviani submitted a brief to the DPU on Oct. 9 that stressed the importance of the telecommunications system to the state's economy. After Shannon warned he would publicly battle Dukakis over the issue, Alviani informed the DPU on Oct. 15 that his office was withdrawing the brief.

"The brief had nothing to do with the pros and cons of the rate-setting case," said Richard Gureghian, director of communications for Alviani. "It had to do with our feelings about the telecommunications industry, the need for investment in that industry and its importance to the continued strength of the state's economy."

Gureghian said the brief did not advocate a rate increase. "We were asked by the attorney general's office to withdraw the brief, and we acquiesced," Gureghian said.

But, according to a spokeswoman for Shannon's office, the brief echoed New England Telephone's private interests.

"The brief sounded very familiar, and the ring we heard was the party line put forward by Ma Bell," said Mary Breslauer, a spokeswoman for Shannon's office. "We never asked Alviani's office to withdraw, but we made it clear that we'd go to the mat with them publicly if it remained part of the active file before the DPU."

Shannon told the DPU that New England Telephone is passing the costs of overhauling the state's telecommunications system to residential customers, despite the fact that such renovation will largely benefit the business community.

"We are asking for a $150 million rollback in rates for residential customers. We argue that New England Telephone's profits are way up, costs are way down and they have more than enough money to make the investments they need and still give basic customers a break," Breslauer said.

The New England Telephone overhaul includes installation of new digital switching and fiber-optic facilities. The attorney general's office has claimed the company is seeking to raise $120 million in residential rates to subsidize the improvements, a charge the company denies.

"At no point have we requested that rates be increased. In fact, Massachusetts customers pay a basic rate that is 40% lower than the national average," said Mark Marchand, a spokesman for New England Telephone.

Marchand said the company noted a $120 million shortfall in revenue requirements in a brief filed with the DPU. "We were not asking for an increase of that amount, but merely providing information the DPU requested," he said.

RBHCs report 3Q earnings growth

continued from page 11

lated operations. The company declined to state whether those operations are profitable.

BellSouth Corp.'s nonregulated operations grew 23%, contributing to an overall 8% increase in revenue for the third quarter, as compared with the similar quarter in 1986. The company said an early retirement plan now in effect will help lower operating costs in coming quarters.

Pacific Telesis Group also cited increased calling volumes as a factor in revenue growth. The company's total quarterly revenue grew less than 1%, as compared with last year's third quarter, while sales from unregulated operations grew 10%. The company said, however, that unregulated operations are not yet profitable.

William Burnett, vice-president of research with Hartford, Conn.-based investment concern Advest Group, said, "The 8% average earnings growth we've seen this quarter is reasonable for the RBHCs, and, in the next two years, I think you'll see some good income coming from their unregulated operations. Those businesses take time to get going, but after they gestate, they'll be successful."

Alcatel enters U.S. picture

continued from page 11

rently, it is estimated that business communications and office automation equipment together contribute about 20% of total annual revenue. Alcatel officials declined to provide a revenue split.

Alcatel's operations in North America consist of two divisions, Alcatel N.A. and Alcatel Business Systems. Alcatel N.A., which is projected to post 1987 sales of $350 million, is headquartered in Claremont, N.J., and markets cable, microwave antennas and other transmission equipment to local and long-distance carriers and utilities.

Alcatel Business Systems comprises four subsidiaries organized by product line. One, Alcatel Information Systems, Inc., sells computers, peripherals and other vendors' local network equipment to end users. The second, Qume Corp., markets printers and other peripherals.

The other two subsidiaries — Alcatel PABX Systems Corp. and Corinth Telecommunications Corp., or Cortelco — sell communications equipment to end users through direct sales and distributors.

Cortelco claims to be the second largest domestic manufacturer of telephones marketed through retail channels, while Alcatel PABX Systems represents Alcatel's largest presence in the end-user market here today.

Alcatel PABX Systems Corp.

As one of the four Business Systems subsidiaries, PABX Systems Corp. is made up of the former ITT Business Communications Corp. and CGE's Thomson CSF Communications, Inc.'s private branch exchange and key systems operations. PABX Systems sells ITT's System 3100 PBX and the CGE line of OPUS key systems, giving the company a product line that ranges from a 10-line key system to a 576-port voice and data PBX.

Atherton said PABX Systems intends to be a major player in the domestic PBX market and that, despite early problems with the 3100 switch, that product is now selling very well. Projected 1987 domestic sales for the company are $40 million.

Combining the PBX operations of CGE and ITT has created a company with the potential for tremendous sales volume, Atherton said, and that will allow Alcatel to fund a research and development program of more than $150 million. The company needs to earmark that much money for R&D of the products necessary to compete successfully in the domestic PBX market, Atherton explained.

Critical moves

Two critical moves made to ensure the PBX division's success, Atherton said, were a major consolidation of ITT operations and a complete change in distribution channels. Operations scattered throughout the U.S. have been consolidated into one central location in Alexandria, Va. By year's end, Atherton said, the PBX division will employ about 300 to 400 people.

Atherton said the ITT direct sales force in place at the time of the merger was "not effective at selling smaller switches. They cost a tremendous amount in overhead, and the sales volumes were inadequate to support those costs, so we decided to go with completely indirect channels."

PABX Systems now sells entirely through authorized distributors, some of whom are former Alcatel salespeople set up as distributors, a strategic shift Atherton called "quite successful."

Additionally, PABX Systems has gradually moved all its manufacturing operations to the U.S., a move that runs counter to the prevailing trend of domestic companies moving manufacturing operations abroad.

"People believe in buying U.S.-made products," Atherton said. "We put a sticker on all our products that says, 'Manufactured with pride in the U.S.' " Virtually all Alcatel products that are marketed here are also manufactured here, Atherton said.

The piece in the puzzle

Precisely what other major roles Alcatel will play in the domestic communications market has yet to be determined. Atherton said that, until very recently, Alcatel's executives have been busy building a base in the U.S. while leaving questions of strategic direction until later.

"The concept always has been to bring our voice and data product lines together. We define our core business as voice and data networking products, but just how we will bring operations together has not yet been nailed down." Atherton said the company will move increasingly toward supplying a systems integration function for the user. "We expect to have a broad enough product line to be able to sell solutions, not just boxes," Atherton said.

That could be achieved through strategic partnerships with other vendors or through internal efforts, he said.

Fritz Ringling, a principal with Booz Allen Hamilton and Co. in Washington, D.C., said Alcatel's biggest oppportunity lies in acting as a systems integrator, where the company can leverage ITT's installed base of PBX customers to sell both communications and computer equipment. He went on to say that Alcatel someday may have to consolidate operations and focus on fewer markets.

Atherton said he thinks the opposite. "We have twice the strength that ITT did. We are a $13 billion company in communications only — we don't divide our attention among different markets like hotels and automotive. We have a substantial amount of concentration and resources committed to this business."

Nevertheless, analysts agreed that Alcatel's strongest presence is still in Europe through former CGE operations. Ringling said Alcatel's muscle will primarily be confined to international markets.

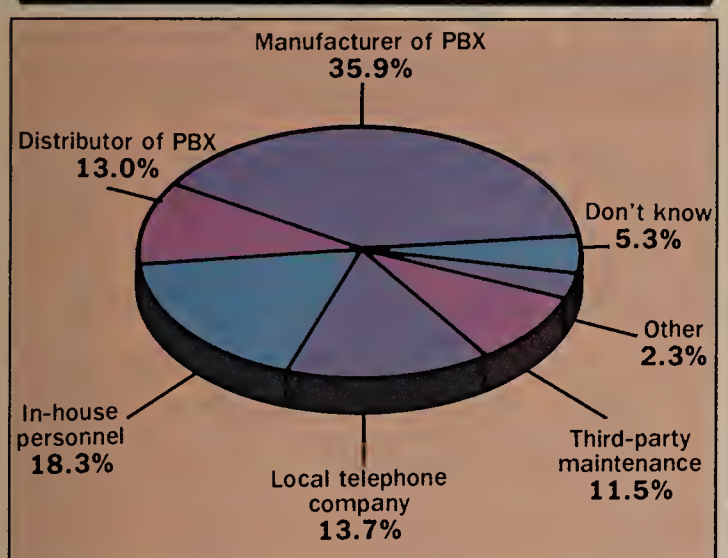
Elizabeth Angus, vice-president with the Angus TeleManagement Group, Inc., a consulting firm in Toronto, echoed that opinion. "It is very difficult for companies, even those that are very strong internationally, to penetrate the U.S. market," she said. "Ericsson and Siemens [AG] have found that, and they both have strong engineering and installed bases overseas. Making it here is different."

TELECOM TRENDS

PacBell files for call-blocking service

Pacific Bell has asked the California Public Utilities Commission for permission to offer a service that would enable customers to block calls to dial-up 976 information services within California, including those that offer sexually explicit messages. Parents who would like to control their children's access to such services may find the blocking service useful. If approved, the feature will be available by year's end for a one-time $5 fee.

Who maintains your current PBX?



Sample: 131 SOURCE: *NETWORK WORLD* CHART

SMITH KLINE & FRENCH LABORATORIES

Innovative Rolm pact to ease switch shift

BY BOB WALLACE
Senior Editor

PHILADELPHIA — Smith Kline & French Laboratories, which signed an estimated $20 million private branch exchange contract with Rolm Corp. in July 1986, hopes an innovative stipulation in the contract, and help from Rolm and IBM, will provide the company with a smooth transition from several large CBXs to several of IBM's new 9751 PBXs.

IBM christened its first PBX, the IBM 9751 CBX, on Oct. 6. The IBM switch, developed by Rolm, uses the same processor as Rolm's largest PBX, the CBX 9000 AE, but is not compatible with it. In an effort to cushion the blow to users that would like to upgrade to the new IBM switch, IBM recently said users that had purchased CBX IIs after Dec. 31, 1986 would receive a 20% credit toward the purchase of an IBM 9751 CBX installed before 1990 ("IBM sets new PBX course," *NW*, Oct. 12).

Bill Cator, corporate telecommunications department director for the pharmaceuticals behemoth, said the company included a clause in its contract with Rolm that requires it to provide what he termed "a satisfactory migration path to a new switch if the switch technology changes dramatically or if the applications capabilities of the PBX change dramatically." Smith Kline also stipulated in the contract that Rolm must inform the company of planned PBX technology changes as far in advance as possible, Cator added.

Smith Kline, one of Rolm's largest accounts, is already working with its IBM Enterprise Marketing Program team, which includes Rolm, to create a palatable upgrade plan. Cator said the company is considering replacing the majority of its large CBXs with the new IBM 9751s. This effort would also likely include the installation of a 9751 at its corporate headquarters, where original plans had called for the cutover of an 800-line CBX.

Cator, who applauded the recent introduction of the IBM switch, said discussions with Rolm had progressed well. "Based on Rolm's track record and our relationship with IBM, we feel we will come up with a successful migration path to the new technology," he said. "Rolm has one of the most exemplary track records of supporting customers during a technology change, and that is what we are in the midst of now."

Cator said neither Smith Kline nor Rolm had called in members of their legal staffs to help reach an agreement on the PBX replacement issue.

CROSS TALK
BOB WALLACE

AT&T's melting pot

The recent announcement of AT&T's intention to merge its two largest digital private branch exchanges, the System 75 and the System 85, helps explain why the planned System 75 Users Group will be formed during the upcoming combined meeting of the System 85 and Electronic Tandem Network (ETN) users groups.

Earlier this month, AT&T confirmed it has a long-term commitment to merge the two switch lines, thereby enabling the smaller System 75 to be used as a switch module within the System 85. This is intended to protect customers' switch investments and to provide migration alternatives.

In retrospect, that move appeared likely when the company said in September that it had invited 200 System 75 customers to attend the System 85 Users Group and ETN Users Group summit scheduled for early November in St. Louis.

Although many System 75 customers welcomed the opportunity to gather with other users of that switch, they probably didn't realize the meeting would serve to unite them with System 85 users in preparation for the integration of the two switches.

AT&T said it will continue to support both PBXs, but it is unclear at this point how long the company will maintain separate groups for the two switches. The System 75 Users Group will initially be a separate entity, but it will meet at the same time and place as the System 85 Users Group.

That's good and bad.

Considering the plans to merge the switch lines, members of each group will need to bone up on the particulars of the other switch. But lumping the System 85/ETN masses in with the System 75 group may drown out the voice of the fledgling group.

Users of Rolm Corp. PBXs are mulling similar issues. They fear the assimilation of Rolm by IBM — completed with the IBM release of a switch line that supersedes Rolm's big switches — lessens the need for the National Rolm Users Group.

For AT&T, the advantages of bringing together different users groups for a single caucus seem to outweigh the disadvantages by far. A multigroup gathering would require less financial and human resources support while enhancing the company's ability to focus its marketing efforts on the users.

Users, on the other hand, appear to have much more at stake. The potentially huge size of the St. Louis event may serve to limit user participation in numerous education sessions. Many users say they are more inclined to stand up and swap success and failure stories in smaller rather than larger meetings.

The collocation of the two large AT&T PBX users groups will provide some benefits for members of both organizations. These users can save time and money by attending one meeting instead of two or three.

The effect of the size of the upcoming gathering has yet to be determined. After the St. Louis meet, System 85 Users Group members will vote on whether to continue collocating their conference with the ETN Users Group conference.

VIRTUAL PRIVATE NETWORKS

Sprint cuts rates for VPN use, features

KANSAS CITY, Mo. — US Sprint Communications Co. recently reduced rates for its Virtual Private Network (VPN) service and waived fees for certain VPN features.

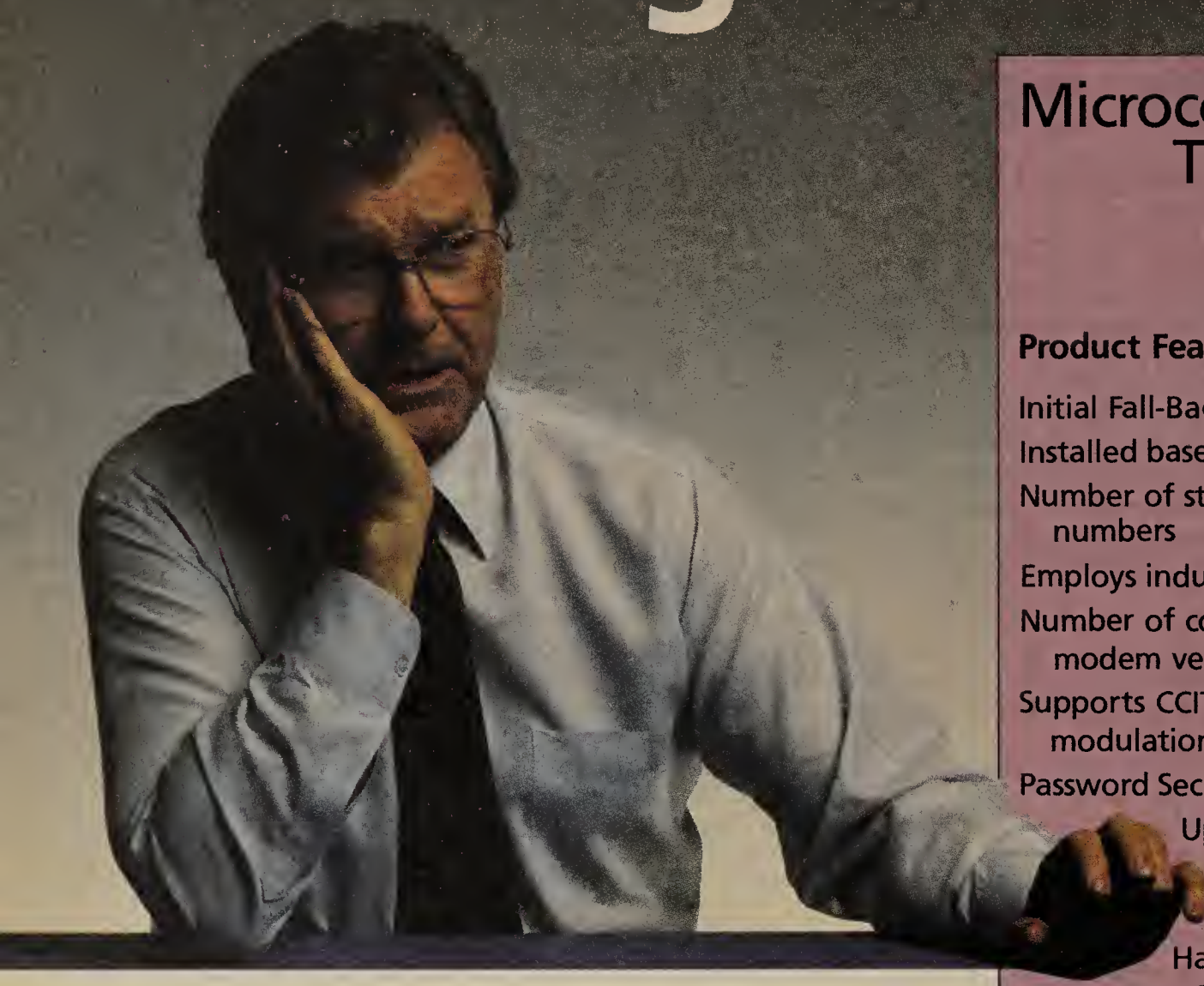
The long-distance carrier sliced VPN rates an average of 3% and eliminated installation fees for new locations and for VPN features such as authorization codes, private network interfaces, route advance and speed codes.

Daytime and evening usage charges for all calls between VPN net locations were cut 1%. Night and weekend usage charges were reduced an average of .13% per mileage band.

Daytime and evening usage rates for calls from on-network to off-net sites were reduced an average of 3%. Nighttime and weekend usage rates dropped an average of .15% per mileage band. Calls placed from off-network locations to on-network locations were reduced .15% per mileage band.

Current VPN users will no longer have to pay $200 per site to add locations to their virtual voice nets. Also eliminated was the per-location fee for the route advance feature, which enables VPN calls to be completed over the AT&T long-distance net during US Sprint network congestion.

If Your Modem Isn't Microcom, You'll End Up Talking To Yourself.



Microcom and the Others . . . The Difference is Day and Night

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Number of compatible MNP modem vendors	40+	0
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International Data Corp.
Framingham, Mass.

AUTOMATIC DATA PROCESSING

ADP takes on debit card processing mart

BY JIM BROWN
New Products Editor

CLIFTON, N.J. — Automatic Data Processing, Inc. (ADP) is muscling in on the debit card transaction processing market as it continues to expand its stronghold in the automated teller machine transaction processing arena.

ADP, a billion dollar firm offering payroll processing and several other financial information processing services, formed its Electronic Financial Services (EFS) division seven years ago to process ATM transactions for financial institutions. It has since become one of ADP's most profitable divisions and is now gearing up to offer debit card transaction processing services. Debit cards allow merchants to debit a customer's bank account at the checkout counter.

In its core business, EFS processes ATM transactions for more than 800 financial institutions. As part of that business, EFS supports 2,200 ATMs owned by clients nationwide, up from 1,000 ATMs in 1985.

EFS also provides network links between 40 regional ATM nets, enabling cardholders of one ATM network to use their cards at ATMs owned by other institutions. The division also offers ATM transaction processing services for institutions that issue cards for use with ATMs owned by other firms.

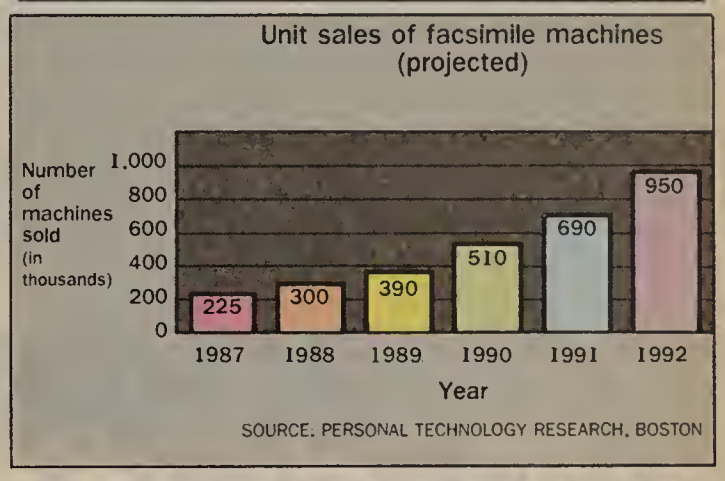
The division's data center here processes some eight million ATM transactions per month. According to Carroll Harrold, operations executive for the division, that figure is expected to increase 4% to 5% yearly for the next few years.

EFS also expects to increase its transaction volume by processing debit card transactions. EFS already processes some debit transactions for regional ATM networks that allow customers to use ATM cards for debit applications, but now the division is targeting card issuers that want on-line verification of customer account balances.

EFS' debit card processing function will include authorization services and links to other

See page 16

Fax market takes off



DATA DIALOGUE

THOMAS W. McDONALD

Managing a new corporate asset

Users currently have many choices in determining how to implement a comprehensive network management strategy. Network management architectures range from simple to grandiose. Vendors such as IBM and AT&T claim to offer total solutions. Users can choose to develop their own strategies and combine offerings from vendors specializing in specific pieces of the network management puzzle, or they can wait for individual vendors to announce integrated solutions based on emerging International Standards Organization (ISO) standards.

Before choosing an architecture, managers should look at which activities in available architectures are relevant and which among them can be done with a reasonable amount of resources.

Before choosing an architecture, users must define network management. Net management can be divided into four basic activities: network operations management, problem diagnosis and resolution, performance management and network design and planning.

To implement a network management strategy, it is important to assess which data sources to monitor, what level of detail, how much data to collect and how to turn this data into meaningful information.

A manager at a financial services house recently put it this way: "We've overcome a lot of the initial technical problems with installation and getting the collection mechanisms in place. Now I've got to figure out what to do with the data. Sure, I know what to do about information on a threshold alarm; that's easy. But I can give you reams of NetView session monitor data. Making it usable for anything other than a diagnostic function may not be worthwhile. My boss isn't asking for this information directly, but how is he going to know what to ask for if I don't tell him what kind of information I can make out of all this data?"

Beyond the basics of keeping the day-to-day operations chugging along, is the work being performed worthwhile? What results is management looking for?

A few years ago, the network was viewed as a single utility and was essentially a medium onto which end users dumped information to be delivered to other users. The network manager had only to keep up what was already tested, implemented and operating.

Managers involved in this process knew that the network was not a heterogeneous environment, and the scarcity of management tools made network management a

See page 20

McDonald is president at MGT Technology Group, a network management consulting firm in Natick, Mass.

MICRO-TO-MAINFRAME LINKS

DCA enhances Irma products

Hayes modems boosted.

BY PAUL KORZENIOWSKI
Senior Editor

REMOTE, Ore. — Digital Communications Associates, Inc. last week announced Irmaremote for Hayes AutoSync, a software product that enables a personal computer outfitted with a modem from Hayes Microcomputer Products, Inc. to emulate an IBM 3270-type terminal.

The announcement, made in the Remote Store here to play off of the town's name, also included the introduction of the Irmaremote X.25 Multidrop Gateway, which enables microcomputers and up to three other workstations to emulate IBM terminal products and communicate with remote hosts via X.25 transmission facilities.

Irmaremote for Hayes AutoSync, which enables a microcomputer to emulate an IBM 3274/3276 terminal controller with attached IBM 3278/3279 terminals, incorporates the Hayes Synchronous Driver provided to DCA through a licensing agreement.

Combining the Hayes Synchronous Driver with the AutoSync capabilities of Hayes' modems allows the DCA emulation product to communicate synchronously using a personal computer's standard asynchronous communications port, the company reported. The software costs $325 and will be available in January 1988.

Hayes is battling with Racal-Vadic, Inc. to establish a standard for synchronous microcomputer communications. Racal-Vadic has wooed more than 20 vendors to support Synchronous Auto Dial Language, its standard for synchronous communications.

Irmaremote X.25 combines DCA's file-transfer and IBM terminal-emulation software with hardware obtained through an OEM deal with Comtes, GmbH, of Bremen, West Germany.

The product, which emulates an IBM 3274 controller as well as IBM 3278 and 3279 terminals, packages data in packets so a personal computer can be connected to a mainframe over an X.25 public or private packet-switching net.

The product will be available in Europe at the beginning of next year and in the U.S. by the end of 1988. Irmaremote X.25 will sell for $1,795.

ADP takes on debit card mart

continued from page 15

host systems. But EFS will shy away from operating debit card reader terminals at merchant locations because such a service would require extensive revision to the system software EFS uses to operate ATMs, Harrold said.

Entry into the debit card processing arena could represent a promising new opportunity for EFS, which has a history of quick growth. With seed money and staff from ADP, EFS quickly assumed its parent's favorite strategy — expansion by acquisition.

One of EFS' first moves was to purchase Massachusetts Automated Transfer System, Inc., the major player in the TX ATM network in Massachusetts, and the Easy Answer ATM net in Illinois. EFS also bought Pacific Northwest-based The Exchange International ATM network, which grew into EFS' national ATM net. The Exchange cardholders have access to 4,200 ATMs nationwide, some of which are actually operated by regional ATM hosts.

That strategy led to quicker-than-anticipated profitability. "This division accomplished something in 3½ years that typically takes five to seven years to do," Harrold said. "In 3½ years, we turned a significant profit and have been turning one ever since." Harrold declined to disclose financial information.

To stay ahead of ATM transaction processing competitor Deluxe Data Systems, Inc. of Milwaukee — the former A.O. Smith Data Systems, Inc. — EFS recently purchased the Beverly Hills, Calif.-based Instant Teller ATM network from City National Bank, which boasts 1,450 ATMs and processes some 2.5 million transactions monthly.

That acquisition gave EFS a West Coast data processing center and the ability to manufacture ATM cards. The processing center enables EFS to market its services more aggressively on the West Coast by trimming the expenses that are currently incurred when linking clients to EFS' East Coast data center. The option of offering an ATM card manufacturing service is still being examined, Harrold said.

EFS also invested in the Convenient Automated Transaction Services (CATS) network along with Southland Corp., Bank of America National Trust & Savings Association and the California Credit Union ATM Cooperative, Inc. CATS is placing ATMs with a MoneyQuick logo in Southland's 7-Eleven stores throughout Los Angeles.

One of the primary factors in the division's success has been the ability of its sales staff to convince financial institutions that it can process ATM transactions less expensively than the institutions could themselves.

"We can sit down with almost anyone and show them in real dollars and cents how we can drive their ATM network cheaper than they can drive it, no matter what its size," Harrold said.

EFS officials also say The Exchange International ATM network has lured customers to EFS services. The Exchange costs members $60 per month for administration and a usage-sensitive transaction fee.

Clients without the financial resources to install their own ATMs can use The Exchange to issue a card accepted at ATMs with The Exchange logo. The EFS service also enables financial institutions to expand in areas where their card is accepted without adding new ATMs.

Harrold refutes competing regional ATM network claims that The Exchange siphons off transactions. "We are there to complement the regional ATM nets by bringing them business. We're not there to take business away," Harrold said. "The Exchange is an easy way to facilitate ATM sharing where there previously was an inability to share."

Also as part of its service, EFS logs all transactions its 27 Tandem Computer, Inc. NonStop II fault-tolerant systems process. At the end of the day, that log is sent via a channel-to-channel link to a batch processing system consisting of 14 NonStop IIs, which compile activity reports for each client. Those reports are accessible to clients via terminal or via a magnetic tape mailed to the client.

The batch system is being replaced by an IBM 4381. EFS will utilize an IBM LU 6.2-based channel-to-channel link to transmit logs from the 27 NonStop II transaction processors to the 4381.

Clients can retrieve those files by dialing into the processing center via an administration terminal, most often an IBM Personal Computer emulating an IBM 3274-type terminal, and a Racal-Milgo, Inc. Communications Management Series (CMS) 24 modem.

The division also touts its ATM monitoring ability as a sales tool. EFS claims only the larger ATM networks can afford to install a system as intricate as the Racal-Milgo CMS they use to determine if and why the ATMs they support for clients are nonoperational.

THE END OF OPTION SHOCK

OPTION SHOCK:

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RACAL

Managing a new corporate asset

continued from page 15

makeshift operation. Pulling off the operation of an effective and efficiently run network was no less miraculous in 1980 than it is today.

Managers today look at a much more complex network environment. Networks are now considered strategic instruments as well as indispensable utilities. The successful use of the network as a strategic weapon to gain competitive advantage is evidenced across industries, and success stories are well-documented.

For example, we see retailers branching out to offer general purpose credit cards and services from the home. Financial service industries reach out with new products that seem to generate organically from their massive data bases. The network plays an essential role in the delivery of all of these new services. These new business offerings could not be successful without reliable and cost-effective networks.

Consequently, the net's visibility seems to have risen dramatically in the corporation. Indeed, successful network operations can be directly tied to successful corporate operations. Corporate management now views the network as a corporate asset and expects it to be managed as such.

We are also experiencing changes in the services networks are expected to deliver. The traditional hierarchical network architecture, which consists of centralized locations of information and processing power surrounded by islands of unintelligent terminals, is being augmented and replaced with distributed peer-to-peer networks. The ability to connect any terminal to any computer network will be a requirement in many companies.

What has the perception of the network as a corporate asset meant to management? It's made every management activity more critical and added additional functions. If the network is considered a corporate asset, then information that explains how the corporate-allocated funds for this resource are being expended is essential. This means gathering accounting information. Most companies still maintain accounting systems based on host usage. This situation becomes less justifiable as networks become more intricate and expensive.

In addition, if "any-to-any" communications is expected, then we must adjust our old styles of management, which were geared to managing communication between centralized sources of data and intelligence and distributed dumb terminals, to a style consistent with handling networks made up of distributed intelligent nodes.

Billback and chargeback systems are related to accounting. Chargeback systems apportion total network cost to users, be it on a departmental or individual user basis. However, this causes some havoc with traditional network management.

Tom Krpata, director of consulting services at Connections Telecommunications, Inc., in West Bridgewater, Mass., recently commented on this subject: "Traditionally, the network was thought to be utilization-driven. This doesn't apply when you get into managing the network as an accountable corporate resource. Response time and individual end-user services come to the forefront as management parameters. Most shops just haven't been conditioned to think of managing a network in this way. We must shift our focus and find the relevant information now. Where is the data that helps us make management sense out of the networking picture? How does this management information assist us in seeing what role the network plays in the whole corporate strategy?"

Current network managers face a compound task — continuing to manage the utility and managing an accountable corporate resource. The network manager's first task is still to ensure day-to-day operations. In fact, the network manager who doesn't maintain what has been tested, implemented and operating, who doesn't provide acceptable delivery of service over the utility, is out of a job pretty quickly. The task has become further complicated by the new requirement to support distributed peer-to-peer networks.

While net managers find many more tools available to assist them in this task today, all of the tasks carried out in network management have become more critical. The number of bytes transmitted on networks continues to increase rapidly, as does the value of the information carried to the corporation. It is now commonplace for networks to transfer millions of dollars worth of assets during a day.

Add to this function the responsibility for providing accounting and chargeback information in order to manage the network as a corporate asset, and it is easy to commiserate with a manager who is searching for a rescue mission rather than facing the next director's meeting.

LOCAL NETWORKING

"The next phase of ISDN involves wideband ISDN. There's been lots of agreement on a proposal called H4 channel, which specifies data rates of 135M bit/sec. That will complement [Fiber Distributed Data Interface]-type LANs and high-speed data transfer requirements.

Mary Johnston
Senior consultant
Telecommunications consulting group
BBN Communications Corp.
Cambridge, Mass.

ETHERNET OVER TWISTED PAIR

Factions split on standard

IEEE study group discusses plans from SynOptics, 3Com.

BY JOSH GONZE
Staff Writer

BOSTON — The nascent effort to advance a standard for implementing Ethernet on nonshielded twisted-pair telephone wire gained momentum earlier this month when five networking vendors made pitches for specific technical approaches before an Institute of Electrical and Electronics Engineers study group chartered to explore the area.

The 60 representatives from 30 companies at the study group's meeting here agreed that market demand warranted a standard for running Ethernet over twisted pair. "A large majority of the people at that meeting definitely felt there was a need for a standard," said study group Chairwoman Pat Thaler.

The attendees, representing a range of companies that include such industry heavyweights as AT&T and Hewlett-Packard Co., also agreed on some of the basic technical goals for the standard. "The group has not yet agreed on a final proposal, though they are in general agreement as to some of the major goals and architectural issues," said 802.2 Committee Chairman Don Loughry, standards manager at HP's Information Networks Group.

Technical goals include a distance capability of at least 100 meters, compatibility with the existing data interfaces of data terminal equipment and some transmission quality parameters such as error rate, according to Thaler, a development engineer at HP.

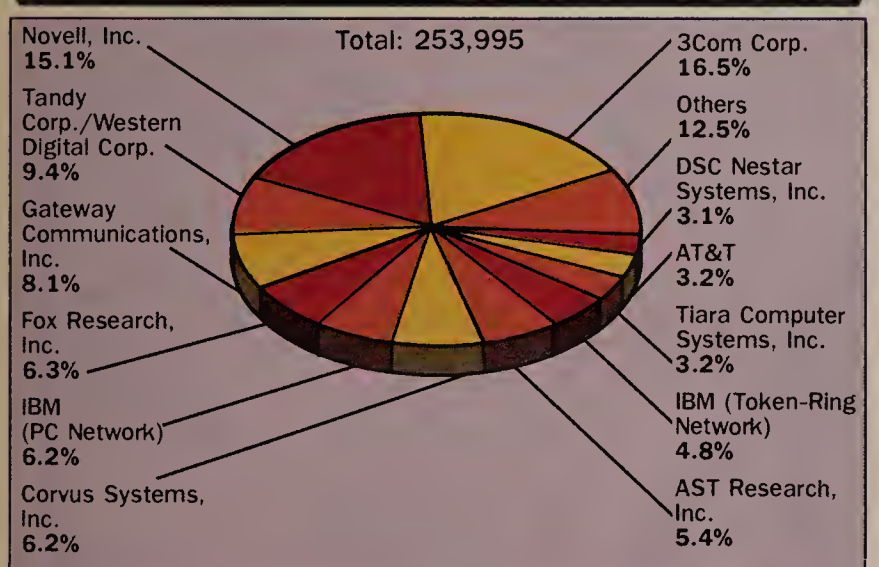
Several of the vendors that spoke in favor of particular technical approaches have recently introduced products supporting Ethernet on telephone wire, including SynOptics Communications, Inc., HP and 3Com Corp. Wang Laboratories, Inc. and Western Digital Corp., which have not yet introduced products in this area, also made proposals.

Different approaches

Predictably, differences in the approaches advocated mirrored product differences. SynOptics and HP both proposed an approach that requires two pairs of twisted-pair wires to connect each workstation, one pair to transmit and the other to receive data. Network nodes with Ethernet adapters would connect to the twisted-pair bus via a transceiver drop cable,

See page 24

Vendor shares in the microcomputer LAN market



1987 worldwide installed base of IBM-compatible local networks by vendor
SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

NETWORK NOTES

Retix recently announced a new Starlan-to-Ethernet bridging product, fueling the hotly competitive internetworking product segment of the local net market.

Santa Monica, Calif.-based Retix announced a bridge that links any combination of Ethernet, thin Ethernet and Starlan segments at what the company claimed to be the best price/performance ratio available. The RetixGate Model 2244 MAC Bridge, priced at $1,950, processes up to 6,000 packet/sec and simultaneously filters up to 10,000 packet/sec, the firm said.

The new bridge is intended to allow users to divide larger networks into a number of smaller subnetworks. Because the bridge filters network traffic to keep information local to a given subsegment, total network throughput can be improved. The bridge permits higher network usage tasks, such as frequent diskless workstation-to-server access or desktop publishing system-to-laser printer access, to be kept local within an available work group.

Irvine, Calif.-based **Western Digital Corp.** and **FTP Software, Inc.**, based in Cambridge, Mass., announced Transmission Control Protocol/Internet Protocol software

See **Network Notes** page 24

LANMARKS

PAULA MUSICH

People aren't talking about Token-Ring buys

Rumors keep filtering back to *Network World* that some very large IBM Token-Ring Network personal computer adapter card purchases have been made in the past several months. One report suggested that one firm had made a 15,000-card purchase; another suggested 20,000 had been purchased by a different firm. Still another source said a 28,000-card purchase had been made.

Such large buying decisions are fraught with danger.

IBM and its customers do their best to keep such purchases from the press for two reasons.

One is to prevent users from tipping their hands. These purchases are typically the result of strategic projects that are designed to give a firm a competitive edge over its competition. "If the competition knows what we are doing," the reasoning goes, "they will be able to respond in kind, and we will lose our competitive advantage."

This argument doesn't hold water because the networking requirements of each firm are not the same.

If two competing companies had the exact same networking hardware and software, along with the same applications, they still would not be competitively equal because no two firms have identical requirements for sharing information and resources.

The decision to install local networks must be preceded by a thorough analysis of the firm's needs for sharing information and resources. Factors affecting such installations must be taken into account, as should expectations for future growth and company goals for information processing.

This research will almost always yield a unique direction that is best suited for that company, and that direction may not even include local-area networks.

> The second reason large Token-Ring customers aren't talking stems from the fact that they based their purchasing decisions on an embarrassing lack of information.

The second reason large Token-Ring customers aren't talking stems from the fact that they conducted their internal research and based their resultant purchasing decisions on an embarrassing lack of information. These companies skipped over or breezed through the needs assessment part of the decision and went right to IBM for Token-Ring cards.

Wrong decisions to install even small local networks have cost individuals their jobs and their companies no small sums of money and wasted time. Wrong decisions to install large networks may engender those same undesirable results, in addition to seriously damaging a firm's competitive position.

In either case, embarrassed users don't want the world to know.

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NETWORKING

Factions split on standard

continued from page 21

called the attachment unit interface. That technique is incorporated in products the two companies have recently announced.

3Com, however, proposed a scheme that uses only one pair of twisted-pair wire. That wire pair can be used to support one workstation or a small, coaxial-cable bus subnetwork. The thin-wire coaxial transceivers built into Ethernet cards are interfaced to twisted pair with an impedence-matching device 3Com calls a PairTamer.

3Com, represented at the meeting by Ron Crane, director of advanced technology, and Ethernet inventor Bob Metcalfe, senior vice-president of technology, pointed out that the company has more than 400,000 Ethernet adapters with built-in coaxial transceivers installed and said it currently ships more than 20,000 more every month.

Another advantage to the 3Com approach, Crane and Metcalfe said, was the ability to link to a wider variety of installed twisted-pair wiring.

Asked for comment on the differing proposals, Loughry took no sides but emphasized the IEEE invariably endorses a single technique.

"Let's not have two solutions for the same problem," he said. Some meeting attendees did take sides, however, saying they preferred the SynOptics/HP approach.

"I suspect two pairs is going to be the way it will come out. There are a lot of problems with using one pair," said Robert Campbell, distinguished member of the technical staff at AT&T.

The media access unit that HP, SynOptics and some others have presented fits in very well with the existing 802 standard, Campbell said. "Right now, there's a media access unit for every kind of [wire]. So this is just an extension of that concept."

Campbell said AT&T will unveil its own products supporting Ethernet networks over telephone-type wire in about six months.

Thaler said she also saw problems with the 3Com approach, such as greater distance limitations, but pointed out that questions about the SynOptics/HP proposal also exist. "SynOptics can talk about its proposal, but any statements about what the study group or 802.3 will do are premature," she said.

The study group, officially named the Type 10BASET Study Group, was chartered in July at the 802 committee's plenary meeting to explore the technical feasibility and market demand for running Ethernet over nonshielded twisted pair.

If the study group decides the technology is feasible and marketable, as it now appears it will, the group will recommend to the 802.3 committee at its meeting next March that a task force be created to form the actual standard.

Network Notes from page 21

for use with Western Digital's Ethernet and Starlan adapters for IBM Personal Computers and compatibles. The software, PC/TCP, allows personal computer users to communicate with TCP/IP hosts and perform file transfer, electronic mail and logon functions with a remote host.

Personal computers running the software can communicate with TCP/IP hosts running several versions of Unix, including Berkeley 2.9, 4.2 and 4.3, Unix System V, Xenix, Digital Equipment Corp.'s Ultrix and VMS.

The software is available now.

Two new protocol analyzers were announced recently by Beaverton, Ore.-based **Tektronix, Inc.** and Sunnyvale, Calif.-based **Network General Corp.**

Tektronix unveiled the TMA802 Media Analyzer, which operates with all IEEE 802 local network standards, including 802.3 Ethernet, thin Ethernet and Starlan; 802.4 (Manufacturing Automation Protocol) token-bus; and 802.5 token-ring. Network interfaces for each are available as options with the analyzer, which operates in three modes.

In monitor mode, the analyzer measures network utilization. The analyzer reports the status of the cable for fault isolation in standalone mode, and it gives a detailed view of the whole network in scope mode. It is priced at $2,495.

Network General unveiled a version of its portable protocol analyzer that supports Arcnet protocols. The company, which currently provides an Ethernet and token-ring protocol analyzer, added support of DSC Nestar Systems, Inc.'s Plan series protocols with the Arcnet Sniffer.

The Plan Series protocol suite operates over both Arcnet and token-ring networks. The Sniffer collects, records and analyzes networking protocols.

The Arcnet Sniffer, based on an Intel Corp. 80286-compatible portable computer, is available now for $19,000.

COMMUNICATIONS MANAGER

Getting to the top

Excellent job performance, hard work and being in the right place at the right time are the keys to a rapid rise up the corporate ladder, according to a recent survey of middle managers at Fortune 1,000 companies. Eighty-eight percent of the 100 managers who responded to the survey by TeleSearch, Inc., a Natick, Mass.-based executive search firm, said excellent performance and hard work were the keys to corporate success. Only 9% mentioned office politics, while 4% thought further education would lead them to the top.

MARK MITCHELL & ASSOCIATES

Firm releases key system buy guide

Package runs the purchasing gamut.

BY JIM BROWN
New Products Editor

FOLSOM, Calif. — In an effort to ease the task of acquiring key systems, Mark Mitchell & Associates, a telecommunications consulting firm here, recently released a do-it-yourself package that walks managers through system design and vendor selection.

The $100 Key Buy guide includes a suggested equipment purchase contract and fill-in-the-blank forms that help users decide what features to buy, how to request proposals from vendors and how to interpret those proposals.

According to Mark Mitchell, president of the firm, the guide is designed to provide users with the expertise that would otherwise be provided by a consultant. The package — designed for key systems that support up to 60 lines — can pay for itself by helping managers avoid buying costly features and unnecessary phone lines, he said.

Mitchell heads a staff of three consultants who specialize in helping customers select large private branch exchanges and answering services in the San Francisco Bay area. Mitchell also teaches telecommunications system selection at California State University at Sacramento.

Much of Key Buy is based on the experience Mitchell gained from six years as a sales and marketing representative with Nevada Bell before the AT&T divestiture and his 1½ years at the now-defunct Jericho Consulting firm. Input

See page 26

Look before you leap

Before signing equipment contract:

— evaluate lease vs. buy options

— check vendor background and reputation by calling current equipment users

— lock in pricing for basic system

— lock in pricing for system enhancements and future additions

SOURCE: MARK MITCHELL & ASSOCIATES, FOLSOM, CALIF.

GUIDELINES

RONALD O. BROWN

Staying on top of industry change

These are times of change. Communications technology, regulations and users' demands are all changing.

We now have fiber optics, T-1 and T-3 as well as local-area networks from a myriad of vendors. In the regulatory area, how Comparably Efficient Interconnection (CEI) will be implemented and whether the Bell operating companies will be allowed to enter new markets are still questions. Old vendors die off; new ones replace them.

How does one keep up? What do successful communications managers recommend for their staffs? Here are recommendations that Coopers & Lybrand, a Big Eight accounting firm based in New York, frequently makes to its clients.

First, read newspapers such as *Network World*, trade magazines and professional journals. These are a good source of current events and issues. News summaries, although they generally cost several hundred dollars a year, are big timesavers and worth the expense.

Of course, no one can depend solely on reading to keep abreast of today's rapidly changing communications world. Meetings of professional societies should also be a regular part of professional life. Regular participation in local and national groups is an effective low-cost means of staying on top of industry trends.

Reading and professional activities are good for soft learning. But what about hard learning? For example, how should one approach learning about very small aperture terminals and local-area networks?

If you must learn quickly, a seminar that takes up several days is a good approach. Remember, though, these are expensive in dollars per classroom hour, travel and lost job time. Also, since learning in such a compressed format is like taking a drink from a fire hydrant, retention is low.

Many schools offer continuing education programs in a format more conducive to learning. For example, a two-hour per week approach allows time for homework and time for professionals to absorb what is being taught. Many institutions, such as Northeastern University in Boston, offer certificate programs involving the completion of an integrated course of study. Since they are offered after hours at convenient locations, travel costs and lost job time are kept to a minimum. Also, costs per classroom hour are low. Keeping pace with changes in the industry through courses such as these should be part of every communications professional's personal development program.

Some institutions offer courses on videotape or on live television broadcasts. The National Technological University is developing offerings for satellite delivery. These are good ways to continue learning for those who are not located near a university or college.

Degree programs are the best bet for those without communications degrees who can make the time commitment. A communications degree may become a requirement for professionals entering the field.

Being informed is a professional necessity and responsibility. All communications managers have the obligation to create an environment in which their staffs are able and willing to learn. Departments that follow these guidelines will create an environment for success. Communications managers who do so will succeed because of the successes of their staffs.

Brown is national manager of Office Information Systems and Telecommunications Consulting for Coopers & Lybrand.

ASSOCIATIONS

STC nixes software sales

QUEBEC — Two recent attempts to change the bylaws of the **Society of Telecommunications Consultants (STC)** have ended without success — for now.

During the group's fall meeting in Quebec from Oct. 14 to 18, a motion to allow STC members to sell software they have developed failed to achieve the two-thirds majority needed to change the group's bylaws.

An earlier vote conducted by mail also failed to receive the two-thirds majority needed for approval. Results of the mail ballot were released in late September.

Whether members can sell software is part of a larger ethical question that has raged in the STC for years. The group's canons prohibit the sale by consultants of hardware, software and other non-consulting services.

During the STC's spring meeting, held in New Orleans last May, the board of directors agreed to a temporary relaxation of the bylaws to allow consultants to sell software as long as it was an "incidental part of a consultant's business." That move came after a vote on changing the bylaws by members attending the meeting failed to receive the necessary two-thirds majority by one vote. Because the vote was so close, the 12-member board of directors agreed to ease the restriction on the sale of software until another vote could be taken.

Now, after two unsuccessful efforts to change its stringent bylaws, STC members will be sent a copy of the bylaws and will be asked if they comply with the stricture against selling software, STC President John Barry said.

Consultants who indicate that they wish to continue selling software will be asked to resign as members of the STC. They will be allowed to join the group's vendor advisory council, according to Barry, who is chairman of Barry/Buckley International, Inc. in San Diego.

Barry said future attempts to change the bylaws to allow consultants to sell software are likely. A motion to change the bylaws needs the support of 10 STC members in order to be put to a vote by the membership, according to Barry.

In other association news, plans for the June 5-8 **Association of**

See **Associations** page 26

Key system buy guide released

continued from page 25

from users, vendors and other consultants is included in the package.

While at Jerico, Mitchell did systems design and analysis for companies whose telephone systems were large enough to justify consulting fees of $20,000 to $30,000. That type of fee is often more than the cost of an entire key system. "It appeared to me nobody was making anything low cost enough for small businesses, which are what this country is primarily made up of," he said.

Mitchell has tested elements of his guide on members of his telecommunications system selection class. Other parts of the guide were tested by vendors.

Included in the package is a preliminary request for proposal form, which enables users to determine which vendors have an interest in making bids. Another form helps managers create in-depth RFPs that specify system needs and features. On that RFP, vendors describe who will be responsible for installation and ongoing service and the way their organization is structured.

The package supplies a checklist the manager uses to ascertain which vendors have met the specifications of the RFP. "Chunks of the RFP are modified versions of what I used at Jerico to select large systems," Mitchell said.

Key Buy also provides a decision-making plan that enables managers to take information supplied on the RFP and measure it against needs before selecting a vendor. An appendix supplies other decision-making tools such as questions to ask people already using a system and what to look for when visiting a vendor's office.

"Because some people shy away from making decisions, we tried to put a methodical way of thinking in the decision-making section," Mitchell said.

The RFP included with the package provides a single format for vendor responses, as opposed to the myriad of formats that may be submitted by vendors.

According to Mitchell, the one- to two-page price quotes that most key system vendors supply often confuse potential customers. "People can't make a decision from those price quotes. They accumulate a stack of those things from different vendors, each of which has its own slightly different little twist, and they make a decision based on either frustration or a reference from someone who already uses that type of system," Mitchell said. The reason one firm uses a system may not apply to another firm, he added.

The sample equipment purchase contract supplied with the package is the same one Mitchell offered as part of a job he did for two California school systems. Legal counsel for those school systems reviewed the contract and concluded it may hold up in court, Mitchell said. "The contract is written very heavily in favor of the buyer," he said. "So it is not likely vendors will accept it, because it is asking them to meet some pretty stringent requirements. But my attitude is to put things to protect the buyer in the contract and let the vendor tell the buyer up front what problems they have with it."

Without a contract prepared with the user in mind, managers often accept a vendor-prepared contract, "and that can be heavily weighted in the vendor's favor," Mitchell said.

The package also suggests that managers lock in the price for the agreed-upon system as well as the price for any add-on components before making the purchase. This will give managers an idea of what the system will cost initially and how much it will cost to expand the system or add new features in the future.

Key Buy is designed for the market for key systems with up to 60 lines, and Mitchell said he is devising a counterpart for buyers of PBX systems with up to 150 lines. He said he is also considering developing a personal computer-based version of Key Buy.

Mark Mitchell & Associates can be reached at 128 Canyon Rim Drive, Folsom, Calif. 95630, or by calling (916) 989-3625.

Associations from page 25

Data Communications Users' (ADCU) 1988 National Conference are under way, and interest in the annual event seems to be high. According to Executive Director Augie Blegen, the large number of exhibitors that plan to make the trip to Atlantic City, N.J., forced ADCU to move the conference to larger facilities in the city's new Showboat Hotel and Casino.

"Our exposition this year was a sellout," Blegen said. "It became quite apparent that we could no longer limit the exposition and, thereby, not accommodate the number of exhibitors that really wanted to meet face-to-face with the purchasing power ADCU represents," he said.

ADCU has a membership of more than 225 firms.

NEW PRODUCTS AND SERVICES

Coming up in the Nov. 2 issue:
▶Special Product Focus on communications processors

ASHTON-TATE SOFTWARE

PCs offered S/36 access

BY JIM BROWN
New Products Editor

TORRANCE, Calif. — Ashton-Tate Corp. is expected to release today software that will enable IBM Personal Computer users to access and download data from IBM System/36 minicomputers directly into dBase III Plus data base management system applications.

The software, dBase Direct/36, is an add-on software module for dBase III Plus and Ashton-Tate's first attempt to link a personal computer to a larger system. The package runs on an IBM Personal Computer equipped with 640K bytes of random-access memory and an IBM 5250 Emulation Adapter or compatible product that enables the microcomputer to emulate the 5250 terminals supported by the IBM System/36.

With dBase Direct/36, the personal computer accesses PC Support/36 software on a System/36 to download data files organized under IBM's Interactive Data Definition Utility.

The announcement comes in response to requests from dBase III Plus customers who need access to System/36s, which have limited DBMS functions, said Rob Kimball, group product manager for data base products marketing.

Ashton-Tate has, however, supplied technical advice to third-party vendors that have developed products that make it possible for dBase III Plus applications to import data from larger systems. But those third-party links require the user to leave dBase III Plus and invoke data retrieval commands from another piece of software. Once downloaded, the data has to be converted and loaded into dBase III Plus.

By using the set of 25 commands that dBase Direct/36 adds to dBase III Plus, users can compile a request for System/36 data from within dBase III Plus applications and invoke routines that automatically create a 5250 terminal-emulation session. The data requested is then transmitted to PC Support/36, which downloads it to the personal computer. That data is automatically converted to dBase III Plus format and loaded into the dBase III Plus application.

The dBase Direct/36 package is similar in concept to Lotus Development Corp.'s The Application Connection (T-A-C). The latest version of T-A-C enables personal computer users to access mainframe-resident data from within local DBMS applications, including dBase III Plus.

The user can then download data from IBM's DB2 and SQL/DS, Information Builders, Inc.'s Focus, D&B Computing Services, Inc.'s Nomad 2, On-Line Software International, Inc.'s Ramis II and SAS Institute, Inc.'s Base SAS mainframe-resident DBMSs.

Sold through distributors, dBase Direct/36 costs $1,695.

Ashton-Tate is located at 20101 Hamilton Ave., Torrance, Calif. 90502, or call (213) 329-8000.

OPERATING SYSTEM ENHANCEMENT

AppleTalk made faster

BY JIM BROWN
New Products Editor

BERKELEY, Calif. — TOPS, a Sun Microsystems, Inc. Company, last week released enhanced versions of its TOPS local network operating system that enable IBM Personal Computers, Apple Computer, Inc. Macintoshes and Unix-based systems to communicate with each other over an AppleTalk local network.

TOPS, which recently changed its name from Centram Systems West, Inc., said the new versions will speed communications among AppleTalk-attached personal computers, enable personal computers to share printers and automate logon procedures for Macintoshes.

The firm's TOPS/DOS Version 2.0, which links IBM Personal Computers outfitted with a TOPS FlashCard interface board, now includes a FlashTalk feature that supports personal computer-to-personal computer communications at 770K bit/sec over an AppleTalk net. Personal computer-to-Macintosh communications is still supported at the usual AppleTalk speed of 230K bit/sec.

TOPS/DOS also enables network users to access printers dedicated to other workstations by selecting that printer from a TOPS menu.

TOPS will sell TOPS/DOS software separately from FlashCard, enabling the software to run on other vendors' boards that are designed to link personal computers to AppleTalk. The FlashTalk feature, however, will work only with TOPS' FlashCard.

TOPS/Macintosh Version 2.0, which links Macintoshes to an AppleTalk, enables users to configure their Macintoshes to download selected network files and make selected local files available to other network devices automatically, as part of the logon procedure. Previously, users had to complete that task manually. TOPS/Macintosh has also been made compatible with the Apple File Protocol.

Both new versions enable users to configure an AppleTalk net into work groups linked via bridges.

TOPS also released Version 2.0 of its NetPrint software, which enables personal computers equipped with a FlashCard to print documents on Apple Computer's LaserWriter and other printers supporting Adobe Systems, Inc.'s PostScript page-description language. The package includes a PostScript translator that translates documents from dot matrix format to PostScript.

TOPS/DOS and TOPS/Macintosh are priced at $189. Existing TOPS/DOS and TOPS/Macintosh users can upgrade to Version 2.0 for $29 until March 15, 1988. TOPS/DOS users who purchased the product after Oct. 1, 1987 will receive a free upgrade, as will TOPS/Macintosh users who bought either TOPS Spool or TOPS Translator upgrades.

TOPS FlashCard is $239. NetPrint Version 2.0 costs $189.

TOPS is located at Suite 220, 2560 9th St., Berkeley, Calif. 94710, or call (415) 549-5900.

DIGITAL EQUIPMENT CORP.

DEC Ethernet terminal server trims net costs

MAYNARD, Mass. — Digital Equipment Corp. recently introduced an Ethernet terminal server that supports up to 128 devices and a new single-port Ethernet repeater that enables up to 29 devices to share an Ethernet interface.

The DECserver 500 terminal server, which supports a combination of asynchronous terminals, printers, personal computers and modems, enables connected devices to share a single link to an Ethernet backbone, thus reducing Ethernet cabling and Ethernet transceiver costs. The server can be linked to an Ethernet via a DEC H4000 Baseband Ethernet Transceiver, DEC ThinWire Ethernet Station Adapter or DEC Local Network Interconnect.

The DECserver 500 supports a variety of interface boards. An eight-port RS-232-C board supports devices that occasionally need access to a modem. The 16-port board supports DEC's DEC-423 interface that enables RS-232-C terminal and printer devices that do not require use of a modem to be located up to 1,000 feet from the server. DECserver 500 also supports a 16-port RS-422 interface board.

The new product complements DEC's existing DECserver 200, which links up to eight terminals to an Ethernet.

Terminals linked to DECserver 500 can access DEC host applications and other utilities as if they were connected to the host via a traditional asynchronous controller. DECserver 500 will enable each connected terminal to establish up to eight concurrent host sessions.

DECserver 500 supports intraserver communications, which enables two attached devices to communicate without accessing the Ethernet network.

DEC also announced its DEC Single Port Ethernet Repeater (DESPR), which enables a workgroup of up to 29 devices configured in a daisy chain fashion to share a single link to an Ethernet backbone. DESPR supports a 594-ft-long ThinWire Ethernet cable segment. It repeats the Ethernet signal received from attached devices and links to the backbone Ethernet via a DEC H4000 Baseband Ethernet Transceiver.

DESPR is a smaller version of DEC's Ethernet Multiport Repeater, which links eight ThinWire Ethernet segments to a backbone Ethernet.

DECserver 500 costs $15,250, and DESPR is priced at $875.

DEC is headquartered at 146 Main St., Maynard, Mass. 01754, or call (617) 897-5111.

Opinions

NETWORK INTEGRATION

MARVIN CHARTOFF

When voice and data meet

Today, network management must be viewed from both voice and data perspectives. The desire to integrate voice and data within the corporation has resulted in communications managers' having responsibility for both voice and data networks.

Managers with backgrounds in voice technology typically view network management as encompassing the monitoring of line status and quality, analog modems and other transmission-related equipment, without concern for the traffic sent. On the other hand, managers from the MIS and data processing departments are more concerned with performance-related measurements such as line utilization, response times, delays, throughput and protocol errors.

These distinct perspectives can be broadly categorized as pertaining to the physical level vs. the logical level of a network. To be effective in conducting performance measurement, problem management and the delivery of quality service to the end-user community, today's communications manager needs to be concerned with both aspects of the network.

While a voice-oriented network manager may be ecstatic about a line that is 90% utilized, a data communications manager will cringe, thinking of lengthy response times. Noise on a voice line means the clarity of the sound is impacted but the message can still get through. Noise on a data line means errors, retransmissions, increased traffic loads and possible data loss. This means that both the physical and logical aspects of a data network must be managed and controlled to get a true picture of its overall condition.

Tools exist to aid the communications manager in performing both types of monitoring. Network management systems available from modem and T-1 multiplexer vendors perform physical network monitoring to determine whether a leased-line circuit is operating within specified analog parameters and whether the modems and multiplexers attached to those lines are operating correctly. Analog parameters typically monitored by modem diagnostic systems include jitter, distortion and signal-to-noise ratio. These monitors allow communications managers to identify whether a line or modem is functioning properly, enabling them to present the characteristics of the problem to the local telephone company for resolution.

While the physical network is concerned with lines and modems, the logical view of the network is concerned with performance. Network performance includes total amount of data transported across the network, or throughput; roundtrip delay associated with transferring the data, or response time; percentage of network capacity being used, or line utilization; and percentage of time the network is in service, or availability.

Logical network monitoring is performed by host-based software such as IBM's NetView or by equipment that taps into the lines of a network. Datascopes, which decode data streams and collect statistics, are limited to monitoring a single line at a time. Multiline systems such as Avant-Garde Computing, Inc.'s Net/Alert or Dynatech Data Systems' Prism provide a global view of network performance.

While these tools handle monitoring of either the physical or logical network, their coexistence is not enough. Today, data communications networks play an integral part in a company's ability to offer services to its customers. Effective management and control at both the physical and logical levels is required to ensure that transfer of the data used in daily operations is achieved in a reliable and expeditious manner, providing the best network services possible. Therefore, what is needed is an integrated network management system that provides a view of both levels of the network.

Although IBM has some of these capabilities built into its own modems, the first steps in this direction for multivendor environments are being taken by modem, multiplexer and switch vendors that are providing NetView/PC connections for their network management and diagnostic systems.

The desired system should be highly intelligent, able to correlate between physical and logical level alarms and determine whether the problem is related to poor quality lines, a bad modem or a terminal/processor. With such a system, a network manager from a voice or data background will have the necessary information and tools to keep the network running.

Chartoff is a group manager at Network Strategies, Inc., a communications consulting firm in Fairfax, Va.

NETWORK MANAGEMENT

RICHARD VILLARS

A call for openness

The successful deployment of any future "open" network management systems depends on whether current network management systems are opened to users. This will occur only if users demand access to the internal workings of the systems and if vendors provide users with the tools to take advantage of that access.

No network management product is going to provide off-the-shelf multivendor network management until the mid-1990s. The much-touted Open Systems Interconnect solution to network management, Network Management Protocol (NMP), is at least two years away from being even a draft standard, and implementation of a workable NMP interface by vendors can't occur until long after the draft standard is accepted.

Also, NetView and NetView/PC don't provide extensive multivendor management features, such as complete two-way network control, sought by users. Such advanced features won't be available any earlier through NetView than through NMP.

Further, users should assume that no open network management package will provide 100% of what they want. More likely, the product will conform to the 80/20 rule: 80% of the packaged applications are perfect, but the other 20% are superfluous or unsatisfactory. Unfortunately, no two users will have the same 20%.

Users that successfully overcome these limitations will be those demanding flexibility from network management suppliers. Although network management systems are almost always fine-tuned to varying degrees to satisfy a specific customer's needs, many vendors' implementations make it exceedingly difficult to make additional changes. A vendor's network management package must have the hardware and software capacity to allow rapid and inexpensive user upgrades.

The designs of IBM's NetView and AT&T's recently announced Accumaster network management products don't address users' current needs for flexibility.

The key component of the NetView system for multivendor interfaces is NetView/PC. The current processor base for NetView/PC is IBM's Personal Computer AT. The MS-DOS operating system required by the Personal Computer AT provides little or no programming flexibility for user-designed interfaces. AT&T's Accumaster appears to suffer the same disability.

Additionally, neither the platform that AT&T has chosen (the DOS-based 6300 series) nor the Personal Computer AT appears to have enough processing power to meet the rapidly expanding need for user-designed applications and interfaces.

Other vendors such as Codex Corp. and Digital Communications Associates, Inc. are following a more promising path. They've chosen 32-bit workstations or minicomputers as processor platforms for their network management packages. These systems provide users with more processing power, more detailed graphics and, thanks to their use of the Unix operating system, greater flexibility in terms of expansion and software enhancements. However, such products often limit easy user access to

Villars is a senior market analyst for International Data Corp. in Framingham, Mass.

The best ideas should be common property. Share the wealth by sending yours to *Network World's* Opinions pages. Manuscripts must be letter quality, double-spaced and approximately 600 to 750 words in length. Disk or modem submissions preferred. Columns should be timely, controversial, literate and accurate.

Contact Steve Moore, features editor, *Network World*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701, or call (617) 879-0700, ext. 732.

Opinions

▶TELETOONS — By Phil Frank

the network management data base.

Users with a large installed base of diverse equipment have little choice but to develop their own interfaces. Users must be able to manipulate the data bases and the messaging scheme of the vendor-supplied network management system to create such an interface.

Manipulation of the network management system can be eased for the user. The vendor can use an advanced data base structure operating in conjunction with a fourth-generation language. Examples of such systems include Oracle, Informix and Unify. These advanced systems also enable the user to conduct ad hoc queries of the network management data base. Neither relational data bases nor fourth-generation languages can be considered effective network management tools as currently implemented on a Personal Computer-level processor. A more powerful processor platform and a more flexible operating system such as Unix is required.

Eased access to the data base would open up a vendor's network management system to externally developed applications and interfaces, thus benefiting both users and vendors. It would enable users to implement networkwide management capable of interfacing with multiple vendors' products, as well as provide customized network management functions and make it easier to upgrade the system.

Vendors also benefit from opening up. Built-in flexibility will allow vendors to respond to user demands for new interfaces to third-party products more rapidly. Easy manipulation of the management package will make the system more attractive to users and systems integrators searching for network management platforms for large installations. A flexible net management system also provides greater flexibility in the choice of attached equipment.

The vendor of truly open network management systems will reap not only greater initial sales but also the opportunity to test its system in a wide variety of multivendor environments through large users and systems integrators. And that could result in a better tested, more widely applicable and sellable product for network management.

CONSULTING

GEORGE MOSKOFF

Franchising will never fly

Several consulting organizations have recently begun toying with the concept of franchising telecommunications consulting services. Users should have severe reservations about obtaining consulting services from such organizations for a number of reasons — not the least of which is the dynamic nature of the communications industry.

In the consulting business, the consultant's first job is to assess the client's needs. The second step is to examine why the user's current network isn't working well.

Because all communications technologies and organizational interests are dynamically interrelated, identifying problems and developing workable solutions to them aren't necessarily the result of a linear decision-making process that relies upon pat formulas.

In other words, good counsel can't be derived from purely linear solutions. If it could be, franchised communications consultants would have an advantage over independent consultants simply because franchising is designed to sell commodities — in this case, boilerplate solutions to standard problems.

However, communications consultants aren't dealing with commodities; they're dealing with continuously changing market information and client needs.

Given the dynamics involved in terms of client needs and the rapid pace of technology, there are few pat solutions available for the many problems a consultant might address.

A second problem with the concept of franchising communications consulting concerns the expertise and skills required of individual consultants. To be able to identify and solve user problems successfully, communications consultants must wear many occupational hats. They must have experience in sales, management and operations and possess solid oral and written communications skills.

Because communications technologies change so rapidly, consultants must be effective interpreters and teachers in their dealings with clients. In fact, client education is an area in which many experienced consultants fall short today. To be able to educate clients and assess their needs, consultants need a strong background in communications technologies, marketing, project management, vendor management and client management.

The purpose of a franchise is to ensure users receive services of consistent quality. But a franchisor would find it difficult to determine which consultant franchisees have the right mix of qualifications. And, because there's so much to learn, the possibility of any franchise organization setting up a comprehensive training program seems remote at best.

Even if it were possible, franchise-trained consultants would still lack the knowledge that can only be gathered through time and on-the-job experience.

Aside from the problems associated with assembling a large force of individually qualified and experienced telecommunications consultants, franchising organizations face two other significant challenges — recognition and acceptance. For a consulting organization to succeed in selling franchises nationwide, it would need positive national recognition, strong funding and an impressive existing client base.

To date, there doesn't appear to be any consulting corporation considering franchising that can meet all three criteria adequately. When and if the time comes for such a corporation to emerge, it will also have to deal with user and vendor acceptance of the concept.

At this point, the communications industry may be too immature to make knowledgeable judgments about franchise consulting. Until mechanisms exist to ensure that the minimum standards of the parent company are met by all franchise owners, nonacceptance of and poor performance by franchisees will have a negative effect on the telecommunications industry as a whole.

Although it's still too early to determine how franchise consulting will work and how it will be received, users should approach such organizations with caution.

Moskoff is president of Telecom Resource Group Ltd., a telecommunications consulting firm in Geneva, Ill.


XB
XB/748

Emergency data needs are fueling development of state-of-the-art mobile data systems.

NETWORK WORLD

Features

October 26, 1987

▶ *MOBILE DATA COMMUNICATIONS*

How ya gonna call?

BY ALAN J. REITER
Special to Network World

Noxious fumes are escaping from steel drums that seem ready to explode from the heat of the factory's four-alarm fire. Anxious firefighters need to determine what's in the drums and what will happen when the gas is released.

A firefighter reaches for a cellular telephone, dials into a hazardous waste data base at headquarters, receives a facsimile printout and reports to the officer in charge with the necessary information — all within minutes.

This is mobile data communications in action. Mobile data, a small but dynamic and growing segment of the telecommunications market, has the potential to provide unique services for business, government and consumers, and it may generate total market revenue in the billions of dollars for manufacturers and licensees.

Coded Communications Corp. in San Marcos, Calif., a manufacturer of mobile data terminals, says there are more than 8.6 million fleet vehicles in the U.S. but fewer than 200,000 mobile data terminals in operation.

Private radio networks dedicated to data rather than voice traffic are

Continued on next page

Reiter is a free-lance writer based in Washington, D.C.

From previous page
proving to be extremely efficient, cost-effective telecommunications tools. These networks offer such potential advantages as packet switching at 4.8K bit/sec with error correction optimized for mobile environments, sophisticated terminals with user-programmable and specialized keys and computer-aided dispatch software for preprogrammed messages and fill-in-the-blanks forms.

One disadvantage of such private systems is their cost. In addition to the cost of establishing a system of radio towers, the portable terminals can cost from $3,000 to $5,000 each. Since most companies using mobile data radio have been doing so for only a relatively short time, exact cost-effectiveness and break-even figures aren't widely available.

Hello, mobile data

Mobile Data International (MDI) in Richmond, B.C., has gained considerable publicity by supplying Federal Express Corp. with some 16,000 vehicular and 400 handheld clipboard-type portables. The Dallas Police Department is another major user of MDI terminals.

David Morgan, director of information services for the city of Dallas, says the police department desperately needed the additional information-handling capability of the data system.

Instead of switching to another frequency band and spending $20 million to $25 million to replace 3,000 items of equipment, he opted for a $3 million mobile data system and dedicated one of the department's existing radio channels exclusively to data transmission.

So far, the system has been very effective. Morgan estimates that queries by Dallas police for data have been reduced from four or five minutes to 10 or 15 seconds. The mobile data system will extend the life of the current telecommunications network by 10 years, Morgan says.

Victor Dizengoff, president of Vital Two-Way Radio Cab, a New York taxi company, says MDI's taxi dispatch system has "heightened the efficiency of the entire operation."

The system, which cost almost $1 million, has reduced the number of dispatchers needed, provided a wealth of hard-copy reports and eliminated the radio chatter in taxis that irritated passengers, he says. Reports from drivers concerning cab locations and use allow managers to note peak usage times, cabs used and areas served during different times of day.

Motorola, Inc. of Schaumberg, Ill., is currently building what it calls its Data Radio Network in two versions: one for shared, multicompany use and the other for use by single companies.

Operating at 800 Mhz, these wide-area networks transmit at 4.8K bit/sec with an effective throughput of about 2,200 bit/sec. Costs per user average $175 to $200 per day. Currently available in Chicago and Los Angeles, the network will soon be operational in New York, according to Motorola Sales Manager Douglas Friedman.

The Data Radio Network has its origin in the Digital Communications System that Motorola designed for IBM. More than 20,000 IBM field personnel in more than 300 cities are using this system.

The Yellow Cab Co. in Fort Lauderdale, Fla., is beta testing a version of Motorola's Data Radio Network. Mike Gaddis, president of Yellow Cab, says he chose Motorola's equipment partly because of its capacity. He explains that as many as 1,500 calls can be accommodated on a single channel. The network has already cut in half the time needed to dispatch calls during peak hours, he says.

Management concerns

The Los Angeles Sheriff's Department chose ElectroCom Automation, Inc. of Arlington, Texas, as turnkey provider for the $57.5 million upgrade of its telecommunications system.

Lt. Robert Elson, deputy project manager for police mobile digital communications systems, suggests that companies considering a mobile data system should first "fully understand and define operational requirements and commit them to writing. Don't assume another company will know how you do your business."

Elson's contract with ElectroCom stipulates that the company must inform his department of new technologies — even from competing companies — that could improve the data network.

Jeff Morris, manager of market development for MDI, recommends that telecommunications planners pay special attention to both the capacity of telephone or dedicated data lines running to the host computer and the capacity of the host computer's software. Morris explains that once field personnel begin using mobile terminals, data base inquiries can increase five to 10 times.

Jim Moore, managing director of engineering, planning and network systems for Federal Express in Memphis, Tenn., says it's important to determine a user company's communications bottlenecks. Moore recommends maintaining control over as much of the net as possible to avoid obsolescence.

Federal Express, for example, owns its own transmission, receiving and terminal equipment, and it leases its towers. The company also develops its own software. Periodic upgrades are implemented every month or so, using in-house and third-party programmers.

Moore emphasizes the importance of software-driven networks to reduce the time and money spent in upgrading system hardware when capacity needs change.

Cellular data

The advantages of 800-MHz cellular radio for voice are well-known. Since it is a common carrier system, any business or individual may obtain service, and the user doesn't have to maintain the network. Transmission is usually clear, with little or no interference from other telephones or outside media such as two-way radio. Also, cellular telephone prices are dropping due to increased competition. The average price for a car set is down to about $1,200.

Federal Express' Moore recommends maintaining control over as much of the network as possible to avoid obsolescence.

A disadvantage of using cellular for data transmission, however, is what is known as handoff. As a vehicle travels across a coverage area, or cell, the central cellular terminal automatically hands off the signal to different antennas and different frequencies in the next cell.

Even when the cellular phone is stationary, handoff can occur if the switch determines that one cell site is receiving too much traffic. In the fraction of a second necessary for handoff, a data connection can be broken.

There are two ways of dealing with this problem: Ignore it or correct it. Until recently, most cellular data transmission took place at 300 bit/sec. At such a slow speed, very little data is lost and it's easy for a cellular subscriber to reestablish contact. At the newer, faster standard speed of 1,200 bit/sec, the problem is not as easy to ignore; another solution is needed.

This other solution is to use error-correcting software. Spectrum Cellular Corp. of Dallas, a pioneer in cellular data transmission, offers a $695 300/1,200 bit/sec modem with proprietary error-correcting software for dealing with handoff. The company recently entered into a joint venture with OmniTel, Inc. in Fremont, Calif., to develop a 2,400 bit/sec modem.

Of course, as most cellular data users find it rather difficult to type and drive at the same time, data is almost always sent when the vehicle is parked and, therefore, handoff problems are less likely.

Spectrum has identified two primary audiences for its products: police and fire departments. Fire departments have been using cellular data systems to access data bases with detailed information for identifying and controlling hazardous materials. Spectrum sells its HazCom I kit containing a cellular phone, modem, Zenith Z-181 laptop computer, printer, battery pack, antenna and software for $6,500.

Lt. Jack Joyce, response officer for hazardous materials for the Boston Fire Department, says HazCom I has solved problems the firefighters used to encounter when trying to access data bases using standard telephones and lines in an emergency.

Without the system, firefighters must first locate a telephone and then try to fit an acoustic coupler on the telephone's handset. They also have to hope the local private branch exchange will accommodate data communications. The department now has a van equipped with the Hazcom system, allowing firefighters to dial directly into the data bases from a command position right on the emergency site.

Spectrum isn't alone in the cellular data modem market. Beta Business Systems Corp. in San Diego is selling a 300/1,200 bit/sec modem without error-correction software for $395. Grant Freeman, manager of the Communications Systems Group for Beta Business Systems, says a wide variety of nonproprietary error-correction programs are available.

Morrison & Dempsey Communications in Northridge, Calif., offers a 300/1,200 bit/sec modem with the Microcom Network Protocol that costs approximately $100 less than Spectrum's modem. The company also is one of several marketing interface devices that allow peripherals, such as laptop computers and facsimile machines, to be connected to standard cellular phones.

Within the next year, as many as a half-dozen facsimile machines could be unveiled for cellular use. Spectrum is selling a facsimile machine manufactured by Japan Radio Corp. for about $1,200. NEC Corp. and Oki Telecom have demonstrated prototypes. Zytec Systems, Inc. in Dallas is collaborating with SG Corp. of Tokyo to deliver a cellular facsimile machine in January 1988.

Specialized mobile radio

A few operators of specialized mobile radio (SMR) systems have been exploring the potential of using their systems for low-cost data. SMRs are private systems, licensed for five to 20 channels, for business use only. Pacific Mobile Communications of Stanton, Calif., is one such provider. Gene Clothier, president of Pacific Mobile, says the company started testing data transmission over its California SMR network in September.

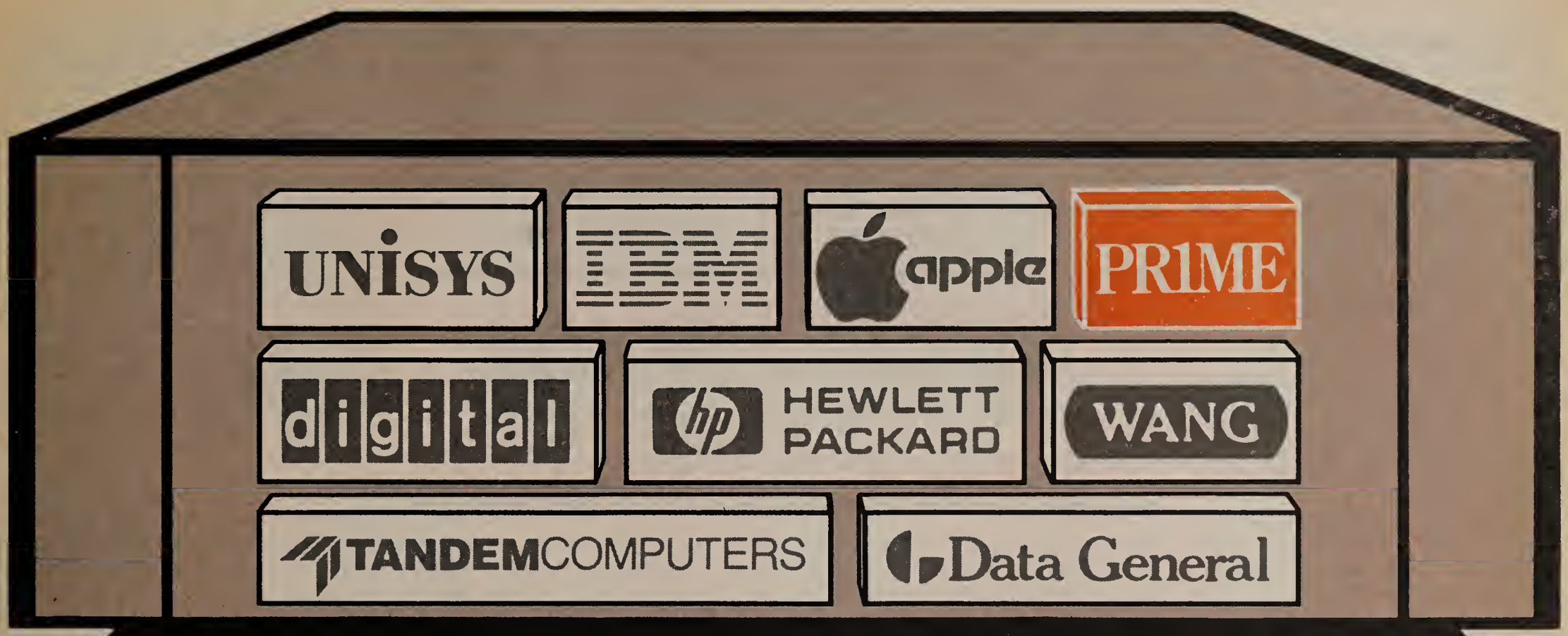
Clothier says several companies are already interested in using SMRs for data. For example, a company that cleans sewers and drains now uses radio to send detailed instructions to its service people, who aren't always highly skilled.

Car 54, where are you?

Automatic vehicle location (AVL) and two-way data communications are the major applications being touted by two new categories of satellite companies: radio determination and mobile communications.

Geostar Corp. in Washington,

Continued on page 36



Open Systems: How open are they?

Prime aims high

Continued from page 1

evolving Open Systems Interconnect (OSI) standards while also keeping pace with its competitors in providing connectivity to standard-setter IBM.

"When we look at the marketplace, we see IBM's SNA as a de facto industry standard," says Joanne Womboldt, Prime's senior manager of communications systems marketing. "In fact, IBM's BSC protocol is still a baseline for intervendor communications. OSI will come, but we want to offer solutions that can be used until it arrives."

John McCarthy, research manager at Cambridge, Mass.-based Forrester Research, Inc., isn't convinced Prime has the resources to keep pace with IBM protocols and move toward OSI standards simultaneously. He points out that Prime, with less than $900 million in sales last year, is significantly smaller than rivals HP and Wang, not to mention DEC.

Interim solutions

The Department of Defense's Transmission Control Protocol/Internet Protocol and the AT&T-developed Unix operating system are also vehicles Prime believes will allow it to reach new markets immediately while continuing to move toward OSI standards.

To take advantage of what Womboldt describes as the "Unix opportunity marketplace," Prime this spring released its EXL 316 supermicrocomputer, which the company says is designed for high-speed multiuser applications. "When you go a step beyond the PC, MS-DOS and [Operating System/2] to the area of developing technologies, there's a lot of innovation that's Unix-based," Womboldt says.

Jeff Bernard, product manager for the Entry Level Systems Business Group, which handles the EXL 316, agrees, adding that Prime developed its EXL 316 specifically to tap into this market.

Continued on next page

From previous page

"We're interested in complying with the increasing demand for open, standards-based hardware and software platforms," Bernard says. "That led us to a Unix-based situation."

According to Womboldt, Prime is implementing the Unix System V Release 3 standard as well as the System V Interface Definition, a government specification for Unix.

Betting on TCP/IP

While industry sources and users view TCP/IP as an interim solution that will fade away when OSI is complete, Prime is betting the protocol has a reasonably long and useful life ahead.

"Communications products take a long time to fade away," Womboldt says. "Even after a viable replacement is available, it takes about five years for the transition to the new product to take place. For example, many people are using BSC [remote job entry] even though SNA is about five years old."

In addition to the EXL 316 and the 50 Series minicomputers, which form the backbone of its business, Prime sells a repackaged three-dimensional graphics workstation from Sun Microsystems, Inc. and markets it as the WS 3600. Both the Sun workstation and the EXL 316 support TCP/IP protocols.

The WS 3600 implements the Network File System (NFS) protocol for file transfer above TCP/IP, and, according to Womboldt, Prime is likely to offer NFS on any new system the company develops for the computer-aided design and manufacturing environment.

The company is currently beta testing TCP/IP for its 50 Series minicomputers, but Womboldt declined to reveal when TCP/IP support will become widely available. The Sun workstation uses the Berkeley Version 4.2 of the Unix operating system.

Prime has also pledged to support the File Transfer Protocol (FTP) with every implementation of TCP/IP. "What NFS does is allow you to do remote record access," Womboldt explains. "FTP, on the other hand, allows you to transfer a file. They're complementary capabilities."

Implementing TCP/IP isn't without problems, says Prime's Womboldt, who sees OSI solving some of the difficulties inherent in using TCP/IP.

Implementing TCP/IP isn't without problems, according to Womboldt, who sees OSI solving some of the difficulties inherent in using TCP/IP. "OSI will offer better interoperability because different vendors implement TCP/IP slightly differently. OSI can fix that, but it's not here today."

When OSI is more fully developed, Womboldt says she believes there will be test suites available where third-party agencies will determine if vendors are meeting standards.

"One reason X.25 is so popular and so universally used is because the packet switchers, like Telenet [Communications Corp.] in the U.S. and the PTTs overseas, offer testing," Womboldt says.

Early X.25 implementor

One form of connectivity that Prime has been able to deliver quite well is X.25. The company was one of the first minicomputer vendors to support the standard with the introduction of Primenet X.25 in 1979. Primenet X.25 allows remote terminals connected to a packet assembler/disassembler to log on to any system on an X.25 network as if the terminals were a local user (see chart on this page).

"Prime has been very strong and progressive in its X.25 support," says William Riess, chairman of the National Prime Users Group's networking special interest group. "They follow the standard very closely and, where most vendors only support the 1980 standard, they're already progressing to the 1984 revision."

Riess, a senior engineer at a large Midwestern utility, operates his own internal X.25 network as well as a connection to Tymnet, and he says he has not encountered any problems with Prime's implementation of X.25.

Consultants and other users echo Riess' praise of Prime's X.25 implementation. "We've never had any trouble running Prime's X.25 to just about anything we've wanted to," says Michael O'Rear, manager of operations for systems and special projects at the University of Southern California in Los Angeles.

While Prime wins nearly universal praise for its X.25 capabilities, the reviews are mixed when it comes to IBM connectivity. The company has a suite of remote and direct-connect SNA links that provide terminal-emulation and file-transfer capability.

Forrester's McCarthy criticizes Prime for not offering a connection to IBM's Professional Office Systems or DISOSS and says the company will have to move to provide links to IBM's LU 6.2. "They're late in introducing these products," he says. "They don't see a lot of demand for it in their accounts because they're not in the big leading-edge accounts. The issue is whether they're going to be a leading-edge vendor or a me-too vendor. If they're really going to make a run at the Fortune 1,000, they've got to get aggressive in the IBM interconnect area."

While Prime says it is committed to LU 6.2, the company is less straightforward about other IBM products. Says Gerry Kokos, director of Prime's Office Systems Business Group, "Since SNA [Distribution Services], [Document Interchange Architecture/Document Content Architecture] and DISOSS are unannounced communications products, I can't comment about their specific development, but Prime has stated its intent to support industry standards once they're established."

Riess defends Prime's slowness in supporting IBM standards. "They don't do LU 6.2 yet because IBM hasn't said exactly what LU 6.2 does. It's hard to implement something when you're trying to aim for a moving target."

Riess also expresses satisfaction with Prime/SNA, the company's suite of SNA products. "We served as a beta site for it, and since the glitches were worked out, we've been very happy with it," he notes.

Riess is testing Prime's recently released Prime/SNA Application Program Interface, which provides direct information exchange between an application running on a Prime 50 Series minicomputer and an application running on an SNA LU 2 host.

"It gives you an interface similar to LU 6.2, but not quite," Riess says. "It stays on the interactive side and uses the same verbs as LU 6.2, so the applications can be easily ported to LU 6.2."

Dan Olsen, supervisor of Prime technical services at Montana Power Co. in Butte, Mont., is a Prime user who is waiting for the computer maker to implement Advanced Program-to-Program Communications/LU 6.2. Olsen's group at Montana Power performs financial analysis and designs rates for the utility. Much of the data the group works with is from customer records that are stored on IBM equipment.

According to Olsen, the file sharing between IBM and Prime is inadequate. Currently, Montana Power is using Prime's EMHASP product, which emulates the IBM multileaving RJE workstation and allows communications with a host

Prime Computer, Inc. intervendor connectivity

General intervendor connectivity products

- Transmission Control Protocol/Internet Protocol support — WSI 300 (for 50 Series), EXLTCP/IP (for EXL 316 supermicro). Capability bundled with PXCL 5500 and WS 3600 computer-aided design and manufacturing workstations. Allows computers supporting TCP/IP over Ethernet to exchange files with and log on to Prime computers. Provides connectivity with IBM 9370 (interfaces for other IBM computers are available from third parties), Digital Equipment Corp., Data General Corp., Sun Microsystems, Inc. and Apollo Computer, Inc. computers. Also supports IBM Personal Computers and Apple Computer, Inc. Macintoshes via Ethernet interfaces.
- Prime BSC 2780 — supports file transfer through remote job entry (RJE) subsystem for DEC, Wang Laboratories, Inc., Control Data Corp. and Unisys Corp. environments.
- Primenet X.25 — allows users to perform intervendor program-to-program communications via Prime's Interprocess Communications Facility X.25 interface routines.
- Network File System — allows users on Apollo, WS 3600 (built by Sun) and PXCL 5500 CAD/CAM workstations to share files transparently.

IBM

- Prime/SNA Server — provides services of a Systems Network Architecture PU 2 node. Along with the Intelligent Communications Subsystem Controller/3, it handles the Synchronous Data Link Control link layer and physical layer for Prime/SNA.
- Prime/SNA Interactive — enables 50 Series systems to emulate IBM 3274 and 3276 control units, 3278 display stations, and 3287 and 3289 printers, in conjunction with the Prime PT200 terminal, an IBM Personal Computer or compatible or an Apple Macintosh running Primelink.
- Prime/SNA Remote Job Entry — enables 50 Series systems to emulate an IBM 3776 Model 3 Multiple Logical Unit workstation.
- Prime/SNA Application Program Interface — provides direct information exchange between an application program running on a 50 Series system and an application running on an SNA host over LU 2 protocols. Provides a migration path to Prime's future implementation of Advanced Program-to-Program Communications/LU 6.2.
- Prime EMHASP — emulates the IBM multileaving RJE workstations, allowing communications with a host supporting the IBM HASP II Workstation multileaving protocol.
- Prime EMX80 — emulates IBM 2780 or 3780 communications terminals, allowing communications to a host supporting either terminal.
- Prime Distributed Processing Terminal Executive (DPTX) — comprises three modules: DPTX/DSC allows a 50 Series system to emulate IBM 3271/3277 and 3284/86/88 devices; DPTX/TSF allows IBM 3271/3277 users to access applications on the 50 Series; and DPTX/TCF allows IBM 3271/3277 devices to pass through the 50 Series to an IBM host. Also provides a programming interface for application-to-application communications.

[illegible]

- Primelink — host-to-IBM Personal Computer, compatibles and Apple Macintosh software for PT200 terminal emulation, file transfer and virtual-disk capabilities over asynchronous lines and 802.3 networks.
- Merge 386 — allows a Prime EXL 316 to run multiple MS-DOS and AT&T Unix System V.3 processes concurrently on the same processor.
- PC Interface — lets IBM Personal Computers and compatibles share data with the Prime EXL 316 system and with other personal computer users. Provides terminal emulation, virtual disk, printer access and ability to use Unix calls within MS-DOS.

[illegible]

- Prime 200UT — file transfer through 200UT RJE emulator.

[illegible]

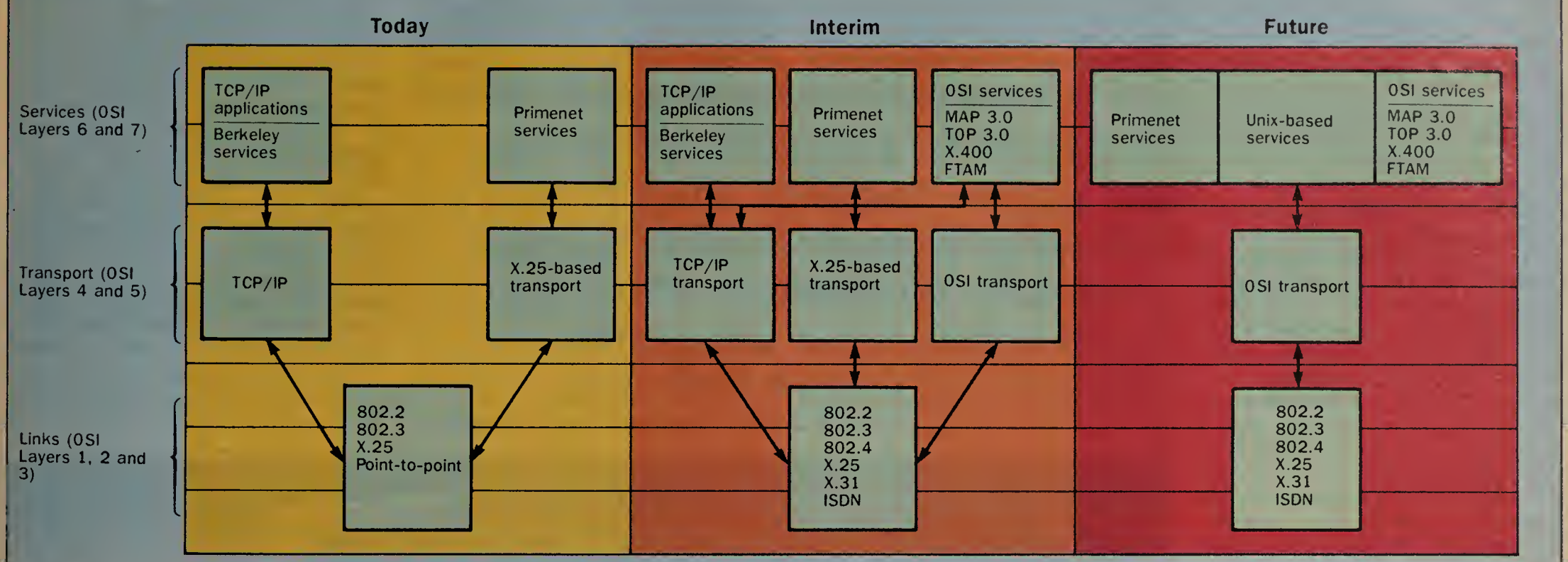
- Prime General Remote Terminal Supervisor — file transfer through RJE subsystem.

[illegible]

- Prime 1004 — file transfer through RJE Univac 1004 emulator.

SOURCE: PRIME COMPUTER, INC., NATICK, MASS.

Prime's Open Systems Interconnect (OSI) migration strategy



FTAM = File Transfer and Access Method
ISDN = Integrated Services Digital Network
MAP = Manufacturing Automation Protocol
TCP/IP = Transmission Control Protocol/Internet Protocol
TOP = Technical and Office Protocol

SOURCE: PRIME COMPUTER, INC., NATICK, MASS.

supporting the IBM HASP II workstation multileaving protocol. Olsen has considered using the Prime/SNA product, but he says for his needs, it would not be much of an improvement over EMHASP.

Dennis Apostolos, senior computer systems analyst at Prudential Property and Casualty Insurance Co. in Holmdel, N.J., is in the process of installing Prime/SNA to allow Prime terminals to emulate IBM terminals and perform file transfer from the IBM host.

"I don't anticipate any problems," Apostolos says. "It's an RJE-based transfer. Prime's used RJEs with IBM for years now." Prudential is also testing Prime's Remote IBM Terminal Access software, which allows remote IBM LU 2 terminals in an SNA network to function as Prime remote log on terminals through IBM's X.25 NCP packet-switching interface and Primenet X.25.

In addition to providing LU 6.2 capability, Prime says it has plans to support peer-to-peer connectivity between its 50 Series minicomputers and IBM's System/36 and System/38 computers, as well as mainframe access. Prime would not reveal a timetable for this connectivity.

Tardy on Ethernet

Prime has been taken to task by users and consultants for its tardiness in supporting 802.3 Ethernet, which the company announced last April.

"Prime has finally released an Ethernet product, and it's about time," says Doug Gold, senior consultant at International Data Corp. in Framingham, Mass. "When you look at the way things are going, with communications being the central nut that brings everything together, [Prime has] really fallen behind in this area. I think now that they've opened up their architecture, they're in a much better position than they were a year ago."

TCP/IP and Ethernet will be Prime's vehicles for providing file transfer and logon to DEC, Data General Corp., IBM Personal Computers and compatibles as well as the Apple Computer, Inc. Macintosh.

"For intervendor communications, we're going to rely on TCP/IP over Ethernet," Womboldt says.

Currently, however, Prime offers only its proprietary Primenet above the network layer of the OSI reference model. Implementations of TCP/IP, Telenet and FTP are currently in beta test. Prime has promised to make the TCP/IP protocols available to users on top of Ethernet 802.3 and IEEE 802.2 before the end of 1987.

"Prime very much wants to provide customers with long-term products, not interim solutions," Womboldt says. "We started development of MAP 2.1, but our analysis of the market indicated that it would not be a long-term product for a lack of migration base, and we have now targeted MAP 3.0."

The company declined to predict when it would roll out MAP and Technical and Office Protocol products but did say they're in development, along with an X.400 messaging product and File Transfer and Access Method support.

Third-party support

Prime has several programs in place to help third-party software developers. According to Jack MacDougall, director of U.S. domestic sales resellers, Prime's reseller business is designed for vendors who have a particular vertical market application. These vendors bundle Prime equipment in conjunction with their application software and sell it as turnkey systems.

In its Application Consultant program, Prime's direct sales force works in conjunction with third-party vendors to sell turnkey solutions to users. The hardware is sold and serviced by Prime, however. Prime also enters joint marketing agreements and provides programming interface specifications as needed.

"Many of our competitors view the resellers as necessary but not an integral part of their strategy," MacDougall says. "That's certainly not the case with Prime because a great deal of our revenue is generated through this means."

PC connectivity

Locus Computing Corp. of Santa Monica, Calif., produces software called PC Interface that allows IBM Personal Computers and compatibles to share data with the Prime EXL 316 and with other personal computer users via RS-232 or Ethernet connections. In addition, the software package provides terminal emulation, virtual disk capability, printer access and the ability to use Unix calls within MS-DOS.

Locus also makes a software package called Merge 386, which allows a Prime EXL 316 to run MS-DOS as a process under Unix. The two products complement each other, according to Ian Schmidt, marketing manager of the EXL 316.

"What you see when you're a user of the EXL 316 is essentially MS-DOS," Schmidt says. "You don't have to know anything else. When you're using the EXL 316 as a file server, communications server or printer server, it's strictly a DOS arena. When you say print, the PC interface picks up the printed output and sends it to the Unix spooler."

Merge 386 allows users to take low-cost character-oriented terminals, connect them to the EXL 316 and run any number of MS-DOS sessions, Schmidt says.

With relatively fewer resources than competitors such as DEC, Womboldt says Prime must set its course more carefully. "DEC is much larger than Prime, so they can do a prototype that they share with customers who need to be on the leading edge. But then they'll go back and reengineer, while Prime does a quality product the first time out."

TCP/IP and Ethernet will be Prime's vehicles for providing file transfer and logon to DEC, Data General, IBM Personal Computers and compatibles as well as the Apple Macintosh.

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From page 32

D.C. was licensed by the Federal Communications Commission in 1985 to establish a radio determination system for land, air and seagoing vehicles. Unlike other navigation systems, Geostar is designed to operate with two satellites. Vehicles transmit location and other information to the dispatcher by one satellite. Voice and data are relayed from the dispatcher to the vehicle via the second satellite.

Currently, Geostar is renting space on the French Argos satellite, says Joanne DeVincent, Geostar's manager of sales administration. Tests are under way with several trucking companies, including Frederick Transport in Dundas, Ont.

Frederick Transport receives about eight position reports a day, according to Brian Ranger, vice-president of management information systems for the 600-vehicle firm. Ranger says Frederick Transport wants to have location updates more often — at least once an hour. Such reports should be available when Geostar's first satellite is launched in the first quarter of 1988, according to DeVincent. Two-way communications capability isn't slated until a second satellite is launched in 1989, she adds.

Some observers expect that data transmission uses could be a significant part of the nationwide mobile telephone services.

Due to great potential demand for two-way communications, Geostar is interested in teaming up with National Satellite Paging, a nationwide 900-MHz radio paging service located in Jackson, Miss.

Company dispatchers could view both the vehicle's position and a map of National Satellite Paging's coverage area on their computers. When they see that the vehicle is within range, they can send a numeric paging signal to the driver. The signal could be a telephone number or a coded message in numeric sequence. Alphanumeric paging is currently beyond the system's capabilities.

One day, a Land Mobile Satellite Service (LMSS) will compete with Geostar. Currently not assigned to any company, LMSS has been designated to operate on the L-band (1.5 to 1.6 GHz) by the FCC. LMSS would offer nationwide mobile telephone service to areas considered too rural to support cellular operations.

Some observers expect that data transmission uses, such as AVL, could be a significant part of the services. But LMSS might not be available until the early 1990s because the FCC ordered all applicants to join together and present a single application. Political wrangling and arguments among applicants have delayed the licensing process.

Delays aside, radio determination and mobile satellites offer at least two advantages over other systems: uninterrupted roaming across both urban and rural locations and flexibility to modify software for users on a national scale.

Delays aside, radio determination and mobile satellites offer at least two advantages over other systems: uninterrupted roaming across both urban and rural locations and flexibility to modify software.

The satellite companies' struggle to achieve their goals is typical of the entire mobile data communications industry. Almost every provider has had to struggle to refine its technology and educate the marketplace in order to gain acceptance in its niche market.

But most mobile data users say they are pleased with existing systems and look forward to future improvements. As the technologies continue to be refined and if price/performance ratios continue to follow the general lead of the computer and communications industries, users will have a lot to look forward to.

Airlines go on-line for supplies

continued from page 2

message format, through the network to the supplier, which then acknowledges the transmission. The supplier can also use a standard message format to indicate that the order can be filled but not exactly in the manner requested by the buyer.

Currently, many large airlines as well as large parts and equipment suppliers have linked their mainframes to share information. The new personal computer-based network will allow smaller suppliers and smaller airlines to communicate electronically.

Moreover, until the advent of Specification 2000, there was no centralized data base available for even the large airlines and suppliers.

The network will allow airlines to cut down on their "protection stocks" of spare parts, according to Sturman. "In the U.S., we have efficient communications and shipment systems," he said. "It does not take long for United, for example, to get a part from General Electric Co. But many airlines around the world need to have large protection stocks on hand."

Sturman cited the example of an airline in Africa that would create a purchase order and send it by airmail to GE. "By the the time it gets to GE, 10 days have gone by," Sturman said. "Then GE sends a message saying they can supply the part. By the time the airline gets the part, 30 days have passed. This means the airline has to keep protection stock on hand for 30 days."

In contrast, according to Sturman, Specification 2000 will allow parts suppliers to receive and acknowledge orders within seconds and ship the parts the same day. "Literally millions of dollars will be saved by cutting down on protection stock," he said. "On top of that, the airlines will gain operational efficiencies because they use a simple menu-driven program and standard message formats that will cut down on incorrect orders." The network will also save money by eliminating telephone inquiries for spare parts.

According to John Curphey, manager of inventory analysis at United in San Francisco, Specification 2000 will help the major airlines deal with smaller suppliers that do not employ electronic data interchange techniques. "In dealing with smaller suppliers, Specification 2000 will help us eliminate our paper purchasing, which will reduce our order lead time, which in turn will reduce our protection stocks."

Curphey said smaller companies supply 40% of United's parts.

In addition, he said, the catalog available through Specification 2000 provides the airline industry with a single source of parts and equipment. "We have a single source of buying information, and the suppliers have to update only one data base while getting a great deal of visibility."

Pat Weiss, manager of provisioning for Sunstrand Aviation, Inc., an aviation equipment manufacturer based in Rockford, Ill., agreed that Specification 2000 will provide exposure for suppliers' products.

Weiss said Specification 2000 will allow suppliers to distribute their shopping lists electronically, and in some cases, cut the parts procurement process from a month to milliseconds.

3Com unveils LAN file server

continued from page 4

warning function for the 3S/400. That function will supply battery power to the server when power fails and will trigger 3+ software to broadcast a message warning that the network will shut down in two minutes. "If you're running a multiuser data base application, the power failure warning is a powerful feature because it opens and closes all appropriate files, saving work that would have been lost," Baldwin said.

A 3S/401 model supports a 150M-byte tape drive for file backup. Authorized users can access menu-driven software on the server to initiate backup procedures.

3Com is expected to introduce the 3S/200, an enhanced version of its existing 3Server3. The 3S/200 comes with preloaded 3+Share operating software and is based on an Intel 80186 microprocessor. It comes standard with 1M byte of RAM and 100M bytes of disk storage, expandable to 900M bytes. A 3S/201 model supports a 60M-byte tape drive for file backup.

When 3Com releases its 3+open network operating system, which will support OS/2 LAN Manager software the company is helping Microsoft Corp. develop, 3Com will offer a kit enabling 3Server3 users to upgrade to 80386-based units.

The 3S/400 costs $11,995, and the 3S/401 is $13,995. The 3S/200 is priced at $7,995, and the 3S/201 is $9,745. The 3+open software is expected to be released in the first half of 1988 and to cost $3,000.

Carriers release financials

continued from page 5

itable." Overall product revenue, of which computer sales are a part, grew 8% for the quarter.

Donahue said the revenue growth is attributable to increased sales of the company's 5ESS central office switch and, to a lesser extent, increased sales of other products such as private branch exchanges.

AT&T will concentrate on increasing product sales in coming quarters in order to offset the decline in its rental revenues, according to Donahue.

Theodore Moreau, a vice-president with the Milwaukee-based investment concern Robert W. Baird & Co., Inc., said, "I'm not convinced AT&T can continue such strong sales of the 5ESS."

He added, "Central office switching is a declining market. I think that AT&T needs to watch its expenses closely and also needs to focus on the strengthening of its product sales."

MCI Communications Corp.

Revenue for MCI's third fiscal quarter was up 9% from $910 million to $994 million. The carrier enjoyed a sharp 22% increase in earnings for the quarter, up from $18 million for the same quarter of last year to $22 million for this current quarter.

MCI's quarterly performance exceeded the expectations of most analysts, who said that declining costs and a wider array of services bode well for the carrier's financial future.

The cost of leased facilities — what MCI pays AT&T and other carriers to complete calls to areas it does not serve — decreased to 3.7% of revenue for the quarter, which was down from 7% last year, according to spokeswoman Kathleen Keegan.

Equal access costs also declined slightly as a percent of revenue, from more than 50% last year to 49% of revenue in the third quarter this year.

Keegan said she anticipates that these costs will remain stable for the rest of the year.

Additionally, MCI spent less on modernizing its network in the quarter, due to the $800 million earmarked for network expansion in 1987 vs. the $1.1 billion set aside last year to modernize network facilities.

Keegan said MCI's revenue growth for the quarter was strong, despite rate reductions of 12% since the beginning of the year.

MCI intends to aim at the high-end commercial market, she said, and new services such as 800 and worldwide direct dial will help attract that customer base.

Moreau said MCI's third-quarter results were "outstanding" in view of rate reductions. He noted that MCI's mix of business services is improving.

"800 and international services are high-margin businesses and will help draw large accounts," he said.

US Sprint Communications Co.

GTE and United Telecommunications, Inc. posted an operating pretax loss of $165.11 million for US Sprint, exceeding the loss of $157.99 million reported in the third quarter last year.

Third-quarter losses were, however, significantly less than the $282.40 million lost posted in the second quarter of this year, and revenue of $685.42 million showed a healthy gain over last year's third-quarter figure of $552 million.

US Sprint also announced its September sales increased more than 50% over June.

US Sprint now carries 74% of its customer traffic over its own network, a United Telecom spokesman said, and more than 90% will be transferred to the fiber facilities by year's end.

"US Sprint showed a strong gain in revenue this quarter, indicating that it has gained market share," commented Robert Wilkes, a vice-president with Brown Brothers Harriman & Co. in New York.

"I'm optimistic that they will continue to reduce losses in subsequent quarters as they gain control over fraud and billing problems and move more customers over to their own facilities," Wilkes said.

Salvo adds to NetView stature

continued from page 1

to work with NetView, improved IBM support for distributed applications, a consistent implementation of LU 6.2, the addition of LU 6.2 capabilities to the company's IMS data base management system and a new model of the System/36.

NetView is evolving from a single set of integrated network management applications to a family of programs that control system and network resources, said Van Hettinger, division director of communications programming at IBM's Communication Products Division (CPD) in Research Triangle Park, N.C.

The NetView prefix indicates IBM deems the product a strategic application and is investing substantial research and development dollars in it, Van Hettinger said.

IBM enhanced and renamed three existing application programs and folded them into the growing family of NetView applications. They include: NetView Performance Monitor, which provides response time information; NetView Distribution Manager, which enables customers to download applications and program changes to remote processors; and NetView File Transfer Program, designed to move large files between mainframes.

Network managers are able to access any of the three applications from a central NetView console, but the applications function autonomously.

NetView Performance Monitor monitors, collects, analyzes and displays response time information, such as how many transactions are processed in a 30-second interval. The product performs all of the functions of Network Performance Monitor, the company's original response time monitor.

In addition, the package can support multiple screen sizes and monitor response time information for a computer running the VM operating system.

Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C. consulting firm, said customers were demanding that response time monitoring be brought under the NetView umbrella.

When NetView was unveiled in May 1986, it integrated five existing network management applications but not Network Performance Monitor, a fact that surprised most analysts. IBM said the device was left out because it was not developed by the group that developed NetView, IBM's CPD. IBM recently shifted the responsibility for Network Performance Monitor to CPD.

NetView Performance Monitor runs under IBM's MVS or VM operating systems and will be available in December. The product costs from $6,000 to $36,720, depending on host. Monthly licensing charges range from $500 to $676.

NetView Distribution Manager enables customers to download applications and program changes to remote processors. The program replaces IBM's Distributed System Executive and can download information to an IBM Personal System/2, System/36 or 370 series host. IBM said the product will help users cut operating costs by eliminating the need for system programmers at remote sites.

A version of NetView Distribution Manager that runs under the IBM MVS operating system will be available in June of next year, and a version for VM will be released in November 1988. Prices for the product range from $17,280 to $92,160, and a monthly licensing fee ranges from $1,080 to $1,920.

The third application, NetView File Transfer Program, is designed to move large files between mainframes. The product replaces IBM's current bulk file transfer package, File Transfer Program Version 2.2. Enhancements include new user interfaces and the ability to collect statistical information such as how many files are transferred between two machines.

The product has a fourth-quarter 1988 shipment date and runs under the MVS, VSE or VM operating systems. The price for NetView File Transfer Program ranges from $7,800 to $24,000, and a monthly licensing charge starts at $260 and ends at $1,500.

Hettinger said the products on which the NetView programs are based will continue to be sold separately but have the same interface as NetView.

Jack Freeman, senior analyst at The Yankee Group, a Boston market research firm, said the three products will aid IBM's battle with Digital Equipment Corp. "IBM made it easier for different types of processors to share information much earlier than anyone expected," he said.

IBM last week also attempted to shore up another important piece of its communications architecture, the LU 6.2 protocol. The protocol defines a broad set of functions that enable two application programs to communicate on a peer-to-peer basis. Certain processors, such as the IBM Personal Computer, could not support the complete set of functions easily. Consequently, implementations of the protocol varied by processor.

IBM selected a subset of LU 6.2 functions, called the Communications Interface, and pledged to implement the subset on its Personal System/2s, System/3Xs and a variety of mainframe operating systems. The first two products conforming to the Communications Interface were CICS, a teleprocessing monitor, and IMS, one of the most widely used mainframe DBMSs. IMS previously was unable to support LU 6.2 applications. With the enhancement, users can use IMS as the cornerstone for next-generation applications, such as distributed data bases.

The mainframe maker also boosted the communications capabilities of the operating system used on its IBM 9370 departmental system. VM/SP Release 6 includes a file-sharing capability that enables users to work with files stored on various IBM 9370s. The new release will be available in December. The product's price ranges from $7,740 to $30,950 and has a monthly licensing charge of $500.

The new release of the operating system also supports two optional packages. VM/DSNX enables a user at a central site to download applications and programs to remote users. The product requires NetView Distribution Manager. VM/DSNX will be available in October 1988, costs between $2,880 and $11,520 and has a monthly licensing charge of $240.

Another option integrates CICS with the VM operating system. The enhancement, which will be available in the first quarter of 1989, enables a number of users to access a single application and is designed for transaction-processing applications, such as inventory control. The VM operating system price, including CICS, ranges from $18,000 to $72,000 and carries a monthly licensing charge of $1,500.

Finally, IBM unveiled an entry level model of the System/36 minicomputer, the System/36 5363. The product features 1M byte of main storage, a 1.2M-byte floppy disk drive and up to 105M bytes of hard disk storage. The company positioned the product as a departmental file server since it can support up to 100 IBM Personal System/2s running on two IBM Token-Ring Networks. The product is currently available, and its price ranges from $10,000 to $12,095.

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DEC plans to link VAXes, PBXs

continued from page 1

ips Telecommunication and Data Systems, Plessey Business Systems and Siemens AG have joined CIT. Bill Johnson, vice-president of distributed systems for DEC, said he expects a total of 12 to 15 vendors to join CIT.

Initial results

The first by-product of the CIT program is an applications program interface (API) with a layered architecture designed to simplify development of intersystem links and integrated applications. The API sits on top of DEC software running under DEC's VMS operating system and involves implementation of code within the switch vendor's PBXs. Once implemented, switches supported can operate with individual DEC computers or multiple systems on a local network.

David Cleveland, DEC's wide-area communications program manager, said early application development efforts have been completed in cooperation with both Northern Telecom and British Telecom subsidiary Mitel. The five other CIT program members have agreed in principle to support the concept, he said. "We believe CIT can also work in a central office switch environment."

Besides the switch vendors committed to CIT, DEC expects the program to spur development of integrated voice/data applications among users, independent communications vendors and software houses. "The vast majority of applications will be created by independent software vendors," Cleveland said.

DEC is still actively discussing CIT with AT&T and each of the seven regional Bell holding companies, but said none of these companies has committed to the program, Johnson said.

DEC and CIT members are currently participating in various domestic and international standards committees to help promote inclusion of CIT within the CCITT ISDN standard.

The company is already making joint proposals with CIT members. Northern Telecom President Desmond Hudson told *Network World* that two Massachusetts universities, the University of Massachusetts and Worcester Polytechnic Institute, have received joint bids from DEC and Northern Telecom. Neither contract had been awarded by press time.

DEC has developed two base applications in conjunction with Northern Telecom and Mitel, which it demonstrated at the conference. One is referred to generically as phone management, and the other is known as telephone support center. Northern Telecom helped develop both DEC applications while British Telecom and Mitel focused their efforts on helping create phone management.

Johnson said the first CIT products will be brought to market in the next 12 months, but he would not divulge pricing information.

These applications employ commands called "Proxy" and "Mirror." When VAXes and PBXs are linked, the computer transmits instructions to the switch using a command called "Proxy." These instructions serve to initiate, transfer and terminate calls. The PBX or central office switch, equipped with the DEC software and an interface card, obeys these orders and uses the "Mirror" command to pass information on call status back across the link.

DEC's phone management application will enable customers to use workstations to initiate, transfer, answer and terminate telephone calls. The status of each call is displayed on the user's workstation. In addition to basic call functions, the application also offers electronic messaging and corporate directory features.

Phone management's electronic messaging capability enables users to send the called party an electronic mail message if the line is busy or is not answered. The called party's workstation notifies the user of messsages.

The message can be accessed from the DEC computer data base and displayed on the workstation in full or annotated version. Users can automatically call back the party who left the message.

The application's electronic directory feature represents the integration of the computer and the switch. It provides the user with several ways of initiating a call to another system user. The data base residing on the DEC computer contains information structured to support these different options.

DEC's second CIT application, telephone support center, is designed for users who have a large number of incoming calls, such as airline reservation centers. Incoming calls reach an attendant with both a workstation and a telephone.

With each call, the system operator accesses information contained in the DEC computer's data base to identify the calling party and determine which station should receive the call. Calling on the power of the switch and the computer, the attendant can simultaneously transfer the call and the appropriate computer file regarding the caller.

CALENDAR

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Nov. 2-3, Washington, D.C. — ONA Plans: The Home Stretch. Contact: Conference Registrar, Telecom Publishing Group, P.O. Box 1455, Alexandria, Va. 22313.

Nov. 2-6, Las Vegas — COMDEX Fall '87. Contact: The Interface Group, Inc., 300 First Ave., Needham, Mass. 02194.

Nov. 3, Los Angeles — TMS380 Token Ring LAN Seminar. Also, Nov. 4, Oakland, Calif.; Nov. 5, Santa Clara, Calif. Contact: Ray Berardinelli, Texas Instruments, Inc., P.O. Box 1443, Mailstation 706, Houston, Texas 77251.

Nov. 3-4, Lexington, Mass. — Networking PCs. Also, Nov. 17-18, Hartford, Conn.; Dec. 15-16, Framingham, Mass. Contact: Laura Manning, Seminar Coordinator, Suite 415, 850 Boylston St., Chestnut Hill, Mass. 02167.

Nov. 4, New York — WATS Alert: What You Must Know About the Latest Long-Distance Service Options. Contact: Marcia Kaplan, BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Nov. 5-6, Los Angeles — Satellite Technology: A Seminar for the Non-Technical Manager & Executive. Also, Dec. 1-2, Atlanta. Contact: Phillips Publishing, Inc., 7811 Montrose Road, Potomac, Md. 20854.

Nov. 9-10, Bethesda, Md. — The Post-Divestiture Tariffs and Their Impact on Large Networks. Contact: Michele Zbiegniewicz, The Aries Group, Inc., Suite 320, 1500 Research Blvd., Rockville, Md. 20850.

Nov. 11-12, Bethesda, Md. — Making Advances in Understanding Telecommunications Tariffs. Contact: The Aries Group, Inc., Suite 320, 1500 Research Blvd., Rockville, Md. 20850.

Nov. 11-13, Boston — Advanced Networking Architectures. Also, Dec. 2-4, San Diego. Contact: Communications Solutions, Inc., 2125 Hamilton Ave., San Jose, Calif. 95125.

Nov. 16-18, San Francisco — IBM's Token-Ring Network: Understanding and Implementation. Contact: Technology Transfer Institute, 741 Tenth St., Santa Monica, Calif. 90402.

Nov. 19-20, Orlando, Fla. — Planning and Managing Corporate Networks: An Establishment Perspective. Contact: Gartner Group, Inc., 56 Top Gallant Road, P.O. Box 10212, Stamford, Conn. 06904.

X.400 tops ticket at world show

continued from page 1

Systems Interconnection (GTMOSI). The newest GTMOSI version, Release 2.1, now offers VM and VSE users an interface to X.400, thereby allowing them to develop their own user interfaces for X.400. GTMOSI had previously been announced for the MVS environment. All X.400 products for the VM and VSE environments will be available in Europe in the second half of 1988.

IBM first announced X.400 products last March with the introduction of a Message Transfer Facility Program for MVS and an X.400 DISOSS connection.

Telenet announced it will be offering X.400-based interconnection service between Telemail 400, its public messaging service in the U.S., and similar messaging services in four other countries. Telemail 400 will be linked to services offered by Telemail, Ltd. in the UK, Teleo (Italcable-SIP JV) in Italy, Telecom and OTC in Australia and DGT in Taiwan.

In addition to IBM and Telenet, 19 other vendors participated in the X.400 demonstration, which was the first such display to feature the full spectrum of X.400 providers. Included were computer vendors that supply private electronic mail systems, such as IBM, Digital Equipment Corp. and Hewlett-Packard Co., and public mail system suppliers, such as Telenet, AT&T, British Telecommunications plc and Japan's Kokusai Denshin Denwa Ltd.

Only vendors committed to delivering X.400 products or services during 1988 were allowed to participate in the demonstration, said Ian Valentine, technical director of UK-based Level-7 Ltd. Each vendor is demonstrating both the message transfer agent and the user interface, or user agent, components of X.400, Valentine said.

Level-7, a consulting firm, was responsible for coordinating the testing among the different vendors' X.400 implementations. Public mail systems in the demonstration were linked via X.25 packet networks, with private X.400 systems linked to one or more public systems via X.25. No message passed through more than one intermediate system before being delivered, Valentine said.

The rising ground swell of support for X.400 spells good news for users. As more vendors offer X.400, users will be able to interconnect different mail systems within their companies as well as link private and public mail systems.

Indeed, support for X.400 has increased dramatically in recent months. Dialcom, Inc. recently announced the U.S. availability of X.400 services for public and in-house systems. Dialcom has already tested for compatibility with DEC's X.400 implementation. Western Union Corp. announced it will add X.400 support to its EasyLink service by mid-1988, and AT&T launched its products that support X.400 in August.

"The demonstration at Telecom '87 drove a lot of vendors to deliver products," noted Ross Staley, AT&T Communications, Inc.'s manager of new services development, international marketing. AT&T is now supporting X.400 in AT&T Mail, a public mail service, he said. The company also recently announced compatibility with DEC's X.400 Gateway and an X.400-based link to Telecom Canada Services' Envoy 100 mail service.

Although Staley said he is convinced the market is ready for X.400, IBM executives have said there isn't sufficient demand in the U.S. yet to warrant gearing up the necessary sales and support effort. Some IBM customers in the U.S. have asked for X.400 products, however, "our European customers have a more urgent need for X.400," said Ellen Hancock, president of IBM's Communication Products Division.

"We understand the need to provide X.400 not only in the 370 environment but in the System/3X and PC environment in the future," Hancock said. "But it is not clear that our customers in the U.S. have a need right now."

And while some vendors, such as Unisys Corp., are committing to support for X.400 across their entire product lines, at least one vendor is holding back. Wang Laboratories, Inc. — although currently developing an X.400 gateway to Wang Office — won't offer an X.400 product until conformance tests are available, said Marius Cojanu, product manager of Message Handling Service-OSI Communications.

The Corporation for Open Systems is working to get such X.400 tests out to vendors by year's end, in time for interoperability testing among vendors planning to demonstrate X.400 at the Enterprise '88 event slated for next summer in Baltimore, Cojanu said.

Even as technical considerations are smoothed over, billing issues remain a stumbling block to the interconnection of public X.400 E-mail systems and, particularly, U.S. services. Providers of these services "are going to have to get together very soon on the issue of interconnection," AT&T's Staley said.

Giants unveil packet switches

continued from page 2

prietary processor and proprietary bus. Telenet's existing TP4/II line is based on an eight-bit microprocessor. Both companies said their new switches are fully compatible with existing switches.

Tymnet/McDonnell Douglas will support its ISIS operating system on the Turbo-Engine and will accommodate other operating systems as requirements arise. The company said it will support Unix.

The initial software release for the Turbo-Engine will support switching of up to 3,000 packets per second. Telenet's TP4/III will initially support up to 8,000 packets per second, with future upgrades planned to boost throughput to 12,000 packets per second.

Tymnet/McDonnell Douglas is using the Motorola VME bus to provide a standard interface to the Turbo-Engine. The company said it will certify voice, facsimile and Integrated Services Digital Networks interfaces developed by third parties for the VME bus.

Development of the Turbo-Engine was driven by technological advances, user demand for higher bandwidth and new communications services, said Al Fenn, vice-president of Network Technology Development. Tymnet/McDonnell Douglas initially plans to support the ISDN Primary Rate Interface on the Turbo-Engine with a third-party external product and later as an add-on board, Fenn said.

> Tymnet/McDonnell Douglas will support its ISIS operating system on the Turbo-Engine.

Telenet's strategy is to integrate T-1 and packet-switching technologies now and to support the ISDN Primary Rate Interface in the future, said Paolo Guidi, Telenet's president. "We are building digital networks that can support not just packet traffic but IBM's SNA and voice as well," Guidi said.

Telenet will deploy the new TP4/III switches in its own backbone network, as well as in a data network for the Norwegian Telecommunications Administration, Guidi said.

Telenet also announced an agreement with OTC in Australia to establish a 56K bit/sec data communications link between the two companies' respective public packet networks. The agreement is aimed at providing Telenet users in the Pacific Basin with better data communications.

The Turbo-Engine will support up to 256 ports per cabinet. The switch is slated for delivery in the latter half of 1988, and pricing has not yet been announced. Telenet's TP4/III will be available in five models, ranging from 100 ports to 3,000 ports per processor. The TP4/III is scheduled for delivery in the fourth quarter of 1988, with pricing ranging from $1,500 to $2,000 per port.

6,000 flock to second NetWorld

continued from page 5

but as we add more Novell networks, the cost adds up," said Benson, associate director of campus computing for the University of Nebraska at Omaha. "We've also been individually connecting PCs to DEC terminal servers on an Ethernet network, but that's a slower connection than directly connecting the Ethernets together at 10M bit/sec."

Benson said he expects that Transmission Control Protocol/Internet Protocol software will provide the means for melding personal computer networks and larger, general-purpose nets supporting minicomputers and mainframes. "We're looking for software that will let us connect Novell file servers to existing DEC Ethernet networks, probably using TCP/IP, and to our IBM SNA network. We also want to get people accustomed to TCP/IP. Since IBM now supports TCP/IP, that might be the basis for doing major network interconnects, especially since we're seeing more Unix machines that support TCP/IP on campus," he said.

Attendees packed another session, entitled "OS/2 and Networking," in search of direction on the communications capabilities of IBM's Operating System/2 (OS/2) and Novell's support for the operating system. Speaker Craig Burton, vice-president of corporate marketing and development for Novell, dismissed published reports that Novell will use parts of IBM's Micro Channel bus architecture to allow NetWare servers to run OS/2 applications.

"That just isn't the case," Burton said. He said, however, that one option Novell is considering is use of a coprocessor inside a Personal System/2 server that would run OS/2 applications.

On the show floor, some 175 exhibitors showcased their NetWare-compatible hardware, software and services. Most of the exhibits were linked together in a 700-node fiber network that included 12 miles of cable connecting 90% of the vendors participating in the network. The other 10% were connected with twisted-pair wiring.

The fiber network from Codenoll Technology Corp. was used to demonstrate Codenoll's new fiber version of a universal wiring scheme for premises data communications.

Users skeptical of rate cap

continued from page 5

RBHCs in July 1988.

The Corporate Committee of Telecommunications Users (CCTU) said it supports the FCC's "commitment to reducing unnecessary regulation, lowering rates to consumers and eliminating carrier incentives to inflate rates" but said it cannot support the rate cap plan.

"A price cap regime could facilitate profits for carriers' shareholders at the expense of the public. Although deregulation is a laudable goal, the commission should not lose sight of the character of the companies it proposes to deregulate: monopolists with captive audiences," CCTU comments said.

In its filings, the International Communications Association said it "is not convinced that the FCC will be able to fashion a price cap system that is demonstrably better than the current system. Price caps appear to require more regulatory resources than the FCC currently devotes to common carrier regulation," and, the filing said, the commission has made no attempt to increase its resources in order to implement the plan.

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